

Patient information factsheet

Ventricular tachycardia stimulation study (VT stim test)

Your doctor has recommended you have the above procedure.

This factsheet has been written to help you understand what is involved. If there is anything you do not understand, or you are unsure why you need this treatment, please ask a member of your healthcare team, who will be happy to explain further.

To help you understand this factsheet please refer to our “how the heart works” factsheet first. This is available on: www.uhs.nhs.uk or ask a member of your healthcare team.

What is a ventricular tachycardia stimulation study (VT stim)?

A VT stimulation study is a test that investigates the electrical system of the heart.

Your doctor believes that an abnormal heart rhythm may be the cause of your symptoms, and a VT stimulation study will allow us to find out more about your heart rhythm disorder (arrhythmia) and decide what will be the most effective treatment for you. Your doctor will recommend you have a VT stim when other tests cannot provide enough information to diagnose your arrhythmia.

About ventricular tachycardia (VT)

The type of rhythm disorder you are suspected of having is called ventricular tachycardia (VT). This occurs when the heart's ventricles (lower chambers) start beating at an abnormally fast rate. When the ventricles are beating rapidly the heart does not work efficiently. This can cause you to experience feelings of weakness, dizziness, chest pain, shortness of breath or even collapse.

VT is often found in people who have previously had a heart attack. The area of the heart muscle damaged by the heart attack forms scar tissue which makes the heart susceptible to abnormal heart rhythms such as VT.

Other people who may experience VT are patients with cardiomyopathy (disease of the heart muscle) or inherited arrhythmias.

There is also a small group of people who have VT with a structurally normal heart. Following a number of investigations your doctor will be able to explain the cause of your possible VT to you.

The procedure

A VT stim test is a catheter technique where flexible wires (catheter electrodes) are passed through a vein in your groin and carefully placed at specific positions within your heart to

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record the electrical signals (activity). The test records how the ventricles react to extra electrical signals (paced beats) delivered within the heart. This allows your doctor to collect detailed information about the cause of your VT, where exactly in the ventricle it is coming from, how fast it is and how easy it is to stop. The most appropriate treatment can then be chosen for you. This procedure is performed under a local anaesthetic with sedation which will help you to relax.

X-ray screening is used during the VT stim so if you think you may be pregnant you should let us know before the procedure.

Risks of the procedure

The VT stim test is safe. However as with any procedure, there are potential risks. Your individual risk of complications will be identified and fully explained by our doctors before you have your procedure. The VT stim test is performed safely in both children and adults.

If you are known to have underlying coronary heart disease the risks are slightly increased.

All the risks outlined below can be treated and are rarely life-threatening.

- **Bruising and bleeding:** this is common in the groin following the procedure. However, this usually disappears within a week and does not cause a problem.
- **Blood vessel damage:** occasionally the catheter electrodes can accidentally damage the blood vessels when being moved into position within the heart. The risk of this happening to you is between 3% and 5%. Serious injury to the blood vessels requiring a surgical procedure to repair the damage is extremely rare and occurs in less than 1% of patients.
- **Pulmonary embolism, or deep vein thrombosis (DVT):** the risk of developing blood clots in the legs (DVT) or heart that travel to the lungs (pulmonary embolism) is extremely rare, less than 1%.
- **Transient ischaemic attack (TIA) / cerebrovascular accident (CVA) - commonly called a stroke:** the brain cells in the part of the brain served by the affected blood vessel die of lack of oxygen and nutrients due to a blockage. Symptoms can be slurred speech, limb/ facial weakness and loss of memory or recall depending on the area of the brain affected. The difference between a TIA and CVA is the duration of your symptoms (less than 48 hours is usually classified as a TIA). This is extremely rare, less than 1%.
- **Cardiac tamponade:** during placement the catheters may puncture the heart muscle causing blood to collect around the heart. If this happens the doctor may need to insert a drain to remove it. The risk of this happening to you is less than 1%.
- **Need for resuscitation:** if a ventricular tachycardia (VT) is discovered (created) during the test, the doctors will try to analyse it (if the rhythm is stable or not too dangerous). But sometimes, the rhythm is unstable and dangerous and it would be best to stop it as soon as possible. This is achieved by an external electrical shock called a 'cardioversion'. (You will be quickly given deep sedation before this is applied so that you won't feel the shock). Occasionally, following the shock, your heart may be stunned and may require a brief period of heart massage. The overall risk of needing this sequence of events (resuscitation) is very small (less than 0.5%).
- **Death:** this is extremely rare but with any procedure there is always a small risk.

Additional risks

Occasionally we have difficulty gaining access through the blood vessels in the groin. In this case we will access the blood vessels through the chest wall. To do this we make a small incision in the chest wall to pass catheter electrodes through the blood vessels into the heart,

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this has potential additional risks:

- **Pneumothorax:** (if the vein under your collarbone is used) very occasionally, the catheter electrodes can puncture the lung wall. Air leaks out of the lungs and collects in the space between the lung and chest wall, resulting in partial or complete collapse of the lung. If this happens the doctor may need to insert a drain to reinflate your lungs. The risk of this happening to you is less than 1%.
- **Haemothorax:** (if the vein under your collarbone is used) the catheter electrodes can sometimes damage the chest wall causing blood to collect in the chest cavity. If this happens the doctor may need to insert a chest drain. This is extremely rare and the risk of it happening to you is less than 1%.

Before admission

- If you are taking warfarin (blood thinner), regular blood tests will be needed for at least four weeks before the procedure, usually at your GP's surgery. We ask that you keep your INR between 2.0 and 3.0. A record of this should be kept in your yellow warfarin book. You should also check your INR three days before your admission (please contact the admissions office on the number given on the last page of this information sheet) to confirm it is in range to enable the procedure to go ahead.
- If you are taking an alternative anticoagulant medicine then you will be given an individual management plan to follow.
- You will have a blood test to ensure you have an adequate level of potassium in your blood (expected range is 4–4.5). The easiest way to achieve this is to ensure that you eat plenty of fruit the day before your procedure (unless you have been diagnosed with a kidney condition which means you have to limit the potassium in your diet – please contact us for more information if you think this may apply to you).
- You will be advised not to eat for six hours before your procedure. If you are diabetic, your nurse will discuss your tablets/insulin dose with you, because not eating may affect your blood sugar levels.

The above advice should be followed unless your admission letter advises otherwise.

Before the procedure

When you arrive on the ward a nurse will talk to you and your family about your hospital admission and answer any questions you may have. Before the procedure, you will have blood tests taken and an electrocardiogram (ECG) recorded. A doctor will see you to explain the procedure and ask you to sign a consent form. This is to ensure you understand the procedure and the associated risks. If you have any worries or questions please do not be afraid to ask.

It is important to tell your nurse or doctor if you have any allergies or have had a previous reaction to drugs or other tests. If you are having the procedure done under a general anaesthetic, you will also talk to an anaesthetist.

A doctor or nurse will insert a small needle into a vein in your hand (cannula) in order to give you drugs during the procedure. You will be asked to shave your groin and if necessary your upper chest and you will then be given a hospital gown to wear.

How long will the procedure take?

The procedure could take a couple of hours. You may wish to let your family know so that they do not worry.

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During the procedure

You will be taken to the catheter lab where a nurse will stay with you and be there to reassure you throughout the procedure. There is a lot of equipment in the room, which is used to monitor your heart rhythm. You will be awake during the procedure, but to help you relax your doctor will give you a short acting sedative.

The doctor will inject a local anaesthetic into your groin to numb your leg. This may sting a little and you may feel some mild discomfort. When the local anaesthetic has taken effect, the doctor will insert a small tube (sheath) into your groin. You should not feel any pain, but if you do, please let your doctor know. Through the sheath the doctor will gently thread several flexible wires (catheter electrodes) into your heart. These special wires will record and ablate (destroy) the extra electrical signals from within your heart. The catheters are about the size of a small drinking straw. The doctor carefully moves the catheters into position within your heart under x-ray screening. You should not feel pain during this part of the test.

Once the catheters are in place, your doctor will attempt to start your arrhythmia by giving your heart small electrical impulses (paced beats) to make it beat at different speeds. Sometimes your doctor will also need to give you drugs to bring on your arrhythmia. This allows the doctor to collect detailed information about the cause of your arrhythmia and pinpoint where the area of extra electrical activity responsible for it is within your heart. During this time you may feel your heart speeding up, slowing down or missing a beat. This may cause you some mild discomfort. This is a normal part of the test and in the controlled setting of a VT stim study is not a danger to you.

The test will be stopped after your doctors have collected and recorded all the information they need. Your doctors will assess how fast your heart is beating; where in your heart the arrhythmia is coming from and how easily it can be stopped. Your arrhythmia should stop by itself, but if it continues your doctor will need to stop it. Occasionally, it may be necessary to give you electric shock treatment (cardioversion). If you need this treatment your doctor will give you more sedation, as a cardioversion is not done when you are awake.

It is important that your doctor knows how you feel when you have your arrhythmia.

Please tell your nurse or doctor if you have any uncomfortable **symptoms** during the procedure, for example:

- chest pain,
- dizziness
- shortness of breath.

After the procedure

After the procedure is completed the catheter will be removed. Firm pressure will be applied to your groin where the catheter was inserted to stop any bleeding.

You will be moved to the recovery area where you will be monitored for a short time.

On returning to the ward you will need to rest for a few hours. You may feel a little sleepy until your sedative has worn off. The nurse will record an ECG, check your blood pressure, pulse and feel your foot pulses, and check your groin for any bleeding. It is important that you remain in bed and avoid bending your affected leg for approximately two hours after the catheters have been removed. This is to prevent any bleeding from the puncture site. After this time you will be able to get up if there are no complications. You will be able to eat and

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drink normally as soon as you return to the ward. The nurse will remove the small needle in your hand. If you feel any palpitations or dizziness after the test, please let the nurse know.

You may also have a chest x-ray to make sure that you do not have a pneumothorax (pocket of air) in your lung.

Results

Your doctor will usually discuss the results and ongoing treatment plan with you and your family after the procedure.

Going home

You will normally be able to go home the same day. Just before you leave, the IV line will be removed.

It is important to ask a family member or friend to collect you and drive you home. If you are being discharged home the same day as your procedure we would advise you to have someone stay with you for the night. If you don't have anyone who can stay with you overnight please inform the CRM coordinator before your procedure.

Before going home, your doctor or cardiac rhythm management (CRM) nurse will advise you regarding the medicines you will need to take or stop, and your follow-up care.

Caring for your wound

You will have a small dressing on your puncture site that can be removed the next day. It is important to keep the area clean and dry until it has healed. If you notice any swelling, redness or oozing please let your GP know.

Resuming normal activities

You can resume your normal daily activities upon discharge from hospital. You should not strain or lift heavy objects for a few days so that the incision site can heal.

Unless your job requires you to lift heavy objects, you can return to work in a day or two.

Driving

If the test is negative, the DVLA instructions state that you are not allowed to drive for at least two days, but we recommend that you do not drive for one week after the procedure. If you hold a Group 2 PSV licence (lorries/buses) you are not allowed to drive for six weeks and you need to inform the DVLA.

If the test is positive, you may need further treatment and it is likely you will not be able to drive until these are completed. Your doctor will give you more information if this applies to you.

Follow-up care

The cardiac rhythm management (CRM) team will give you specific follow-up instructions when you leave hospital. The doctor will write a letter to your GP detailing your hospital stay and treatment.

Cancellations

Unfortunately we do sometimes have to cancel procedures. If this happens to you, we will always try to explain the reason. We fully appreciate that this is a stressful time for you and

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your family and we will do our best to provide you with a new date that is convenient for you as soon as possible.

Who will perform my procedure?

Your procedure will be performed by a specially trained doctor with appropriate experience (although we aren't able to guarantee that you will be treated by a particular member of staff). If the doctor is undertaking training on this procedure they will be supervised by an appropriately qualified colleague

Contact us

If you have any questions regarding your procedure please call: **023 8120 8436** to speak to a cardiac rhythm management (CRM) clinical nurse specialist.

You can also email: uhs.crmnurses@nhs.net

If you have a query relating your admission date please contact the cardiac rhythm management coordinator on: **023 8120 8772**.

Useful links

The following websites also provide useful information:

www.bhf.org.uk

www.heartrhythmcharity.org.uk

An online version of this factsheet is available on our website www.uhs.nhs.uk.

Navigate to: Our services > Blood, heart and circulation > Cardiac rhythm management > Useful information and resources.

For a translation of this document, or a version in another format such as easy read, large print, Braille or audio, please telephone **023 8120 4688**.

For help preparing for your visit, arranging an interpreter or accessing the hospital, please visit www.uhs.nhs.uk/additionalneeds