

Insulin stress test



Information for patients

This leaflet answers some of the questions you may have about having an insulin stress test. It explains the purpose of the test and the side effects you may experience during the test. This leaflet also explains what you can expect when you come to hospital. If you have any other questions or concerns, please speak to the doctors or nurses caring for you.

Confirming your identity

Before you have a treatment or procedure, our staff will ask you your **name** and **date of birth** and check your **ID band**. If you don't have an ID band we will also ask you to confirm your address.

If we don't ask these questions, then please ask us to check.

Ensuring your safety is our primary concern.

What is an insulin stress test?

This test is done to check the function of your pituitary gland. The pituitary is a small pea-sized gland located underneath the brain that produces many hormones. Hormones are chemical signals that help to control and regulate processes in the body.

The insulin stress test involves lowering your blood sugar using insulin to artificially induce a stress response. Low blood sugar levels should stimulate the pituitary gland to release certain hormones and this test allows us to check that your growth hormone and cortisol response is working.

Why do I need this test?

This test is necessary to find out if there is an adequate hormone response to induced stress. To find this out, we measure growth hormone and cortisol.

Growth hormone is needed in childhood to regulate metabolism and promote growth. Growth hormone is produced in adulthood to maintain bone and muscle mass. Growth hormone also affects body fat levels, energy levels, memory and general wellbeing.

Cortisol is a hormone produced by the adrenal glands and plays an important role in your body's response to stress and illness. Cortisol is also involved in regulating your blood sugar, blood pressure and immune system. Greater amounts of cortisol are produced by your body in times of illness. If your body is unable to produce enough cortisol you may not be able to cope with illness and could become very unwell. Cortisol production is regulated by the pituitary gland.

What are the benefits?

The insulin stress test allows us to assess how well the pituitary gland is functioning. It is important to gather this information so we



can predict how well you are able to respond to stressful situations such as an illness or trauma. The results of this test also inform the need for, or changes to, medication.

What are the risks?

A cannula (tiny plastic tube) will be inserted into a vein in your arm or hand using a needle. The cannulation process is similar to that of a blood test. Associated risks with cannulation or a blood test may include:

- multiple punctures to locate veins
- bleeding from puncture site
- bruising
- haematoma (blood build up under the skin)
- fainting or feeling lightheaded
- infection (a slight risk any time the skin is broken)
- phlebitis (inflammation of the vein)

Keeping pressure on the puncture site for a few minutes after the needle is removed will help to reduce bruising.

During this test an injection of insulin will be given into your vein through a cannula, this will cause your blood sugar to drop. When your blood sugar levels fall lower than normal you may feel hot or flushed, sweaty, light-headed, dizzy and shaky. You may also have blurred vision or notice a racing of your heart (palpitation). Very rarely, this test can cause loss of consciousness or seizures. You are likely to feel tired after the test.

It is very important that you tell your endocrine doctor before you come in for your test if you have ever had a seizure or if you have a history of heart problems. You should also tell your nurse before the start of your test.



Once the test is complete your blood sugar should return to a normal level.

Are there any alternatives?

The insulin stress test is the preferred test for assessing your cortisol and growth hormone response.

You may be unable to have this test if you have a history of epilepsy or heart disease. In this case you will be offered a glucagon stress test as an alternative.

Consent

We must by law obtain your written consent to any operation and some other procedures beforehand. Staff will explain the risks, benefits and alternatives before they ask you to sign a consent form. If you are unsure of any aspect of the treatment proposed, please do not hesitate to speak with a senior member of the staff again.

Do I need to prepare for my test?

You will need to attend the Programmed Investigation Unit (PIU) at least a week before the insulin stress test for a blood test which will check that your thyroid function and cortisol levels are normal. This blood test will preferably be in the morning to allow a 9am cortisol level to be taken. On the day of the blood test do not take hydrocortisone or any other steroid tablets, inhalers or creams.

The test may not be suitable for those with a heart condition. For this reason, we will also perform an ECG (heart tracing) at this appointment. If you are unable to have the insulin stress test an alternative test will be offered.



For the day of the test:

Before the test, you should have nothing to eat or drink from midnight, except plain water.

If you are taking hydrocortisone tablets or any other steroid (for example, prednisolone or dexamethasone) **do not take these tablets on the day of the test.** On the day before the test do not take any steroid past 9pm. Do not use any steroid inhalers or creams on the day of the test or 12 hours before the test.

If you are on oral oestrogens (oral contraceptive pill containing oestrogen or oral HRT) you should stop these six weeks before the test. You may continue using oestrogen gel or patches. Please call to discuss with a member of the nursing staff on **020 3299 3034**.

Apart from the medications mentioned above you can continue to take your other regular prescribed medications.

Please bring any medication you require for the day with you, including your steroids, which you can take after the test is finished.

If you are intending to come by car we recommend that another person drives the car. You will be advised against operating a vehicle for at least two hours after your test.

What happens before my test?

When you arrive at PIU you will be weighed, as the dose of insulin is calculated from your body weight. You will have an ECG (a simple test using sensors attached to the skin) which is routine to ensure that you have no heart problems, if this has not been completed previously.



Your blood pressure will be taken and the nurse will ask you about your regular medications. A consent form will be completed and you will be asked to sign this.

What happens during my test?

A cannula (tiny plastic tube) will be inserted into a vein in your arm or hand using a needle from which blood samples will be taken. The nurse or doctor will give the insulin through the cannula which will take about 20 to 30 minutes to have an effect. You may feel all, or some, of the following symptoms of a low blood sugar (hypoglycaemia or "hypo"): hot, sweaty, lightheaded, tired, drowsy, weak, hungry, blurred vision or palpitations.

Once your blood sugar has dropped to an appropriately low level of 2.2mmol/L or less, your body may recover spontaneously but if you continue to feel unwell, you will be given a glucose drink.

Blood samples will be taken throughout the test at varying intervals of 10 to 30 minutes for two hours.

Very rarely, if your blood glucose drops too low this can result in loss of consciousness or a seizure (fit). A nurse will be with you throughout the test and, in the unlikely event of a serious complication, will be able to give you the appropriate treatment. The risk of a serious complication is very low.

How long does the test take?

The test lasts for two hours from the time the nurse gives you the insulin. Sometimes it is necessary to give a second dose of insulin and in this case the test will last longer. You should expect to be in the unit for 3 to 4 hours.



What happens after my test?

Once the test has been completed you will be given lunch. If you are taking steroids, such as hydrocortisone, you will be asked to take your regular dose at this time. After your blood sugar has returned to normal your cannula will be taken out and you will be able to go home. You do not necessarily need to be accompanied. It is normal to feel tired for the rest of the day.

If you are taking steroids: continue to take your steroid tablets as before until you hear from the hospital.

Results will be reviewed by the endocrine team. They will either be sent to you by letter or, in some cases, discussed on the phone or with you at your next clinic appointment. We will also send a letter to your GP. This may take up to six weeks.

Contact

If you have any queries or concerns please contact the Programmed Investigation Unit (PIU).

Tel: 020 3299 3034 or 020 3299 1385. Opening hours: 8am to 6pm, Monday to Friday.

Sharing your information

We have teamed up with Guy's and St Thomas' Hospitals in a partnership known as King's Health Partners Academic Health Sciences Centre. We are working together to give our patients the best possible care, so you might find we invite you for appointments at Guy's or St Thomas'. To make sure everyone you meet always has the most up-to-date information about your health, we may share information about you between the hospitals.



Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

PALS

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. The PALS office is located on the ground floor of the Hambleton Wing, near the main entrance on Bessemer Road - staff will be happy to direct you.

PALS at King's College Hospital, Denmark Hill, London SE5 9RS

Tel: **020 3299 3601**

Email: **kch-tr.palsdh@nhs.net**

You can also contact us by using our online form at

www.kch.nhs.uk/contact/pals

If you would like the information in this leaflet in a different language or format, please contact PALS on 020 3299 1844.