



INSULIN STRESS TEST

What is an Insulin Stress Test?

This is done to test the function of your Pituitary and Adrenal glands.

Insulin is a hormone which controls the level of blood sugar. An injection of insulin given to a person who normally has no problems with blood sugar control (i.e. who does not have diabetes) will lower the blood sugar levels to below normal. The body recognises that the level is lower than it should be and responds by increasing the production of a number of hormones which act to increase the sugar level. Two of these hormones are growth hormone (produced by the pituitary gland) and cortisol (produced by the adrenal glands under the control of ACTH [adrenocorticotrophic hormone] produced by the pituitary gland). It has been shown through research how much cortisol and growth hormone the body should produce in response to a low blood sugar so this test will show if your pituitary and adrenal glands are working normally to produce these hormones.

Before the Test

You should have nothing to eat or drink from midnight before the test.

Please arrive at the Department of Diabetes and Endocrinology, 1st Floor Victoria Building at 08.30 hrs on the day of the test.

If you are on any medication please do not take hormone replacement therapy, steroid tablets or thyroxine tablets until the test is complete unless you have been instructed otherwise.

You should not undergo the test if you have a history of heart disease or epilepsy.

About the procedure.

You will be asked to lie down throughout the test. The test will be explained to you and you will be asked to sign a consent form to say you agree to the test. A small needle (cannula) will be inserted into a vein in your arm. This will allow blood samples to be taken throughout the test without causing you too much discomfort. A blood sample will be taken via this cannula to check the baseline levels of the hormones we are testing for (growth hormone, cortisol, or both) and to measure blood sugar levels. You will then be given a calculated amount of insulin to reduce the level of your blood sugar to a level we know should produce the desired effect. Your blood sugar will soon begin to fall and should reach its lowest point 20-40 minutes after the injection.

Effects on you

You may feel 'sweaty' drowsy, shaky, hungry and have trouble concentrating while your blood sugar is low. These are expected effects and you will be carefully monitored during the test. These effects are usually short-lived and most people start to feel better about an hour after the insulin when the blood sugar starts to rise again. This usually happens spontaneously but if your blood sugar does not recover as expected we may have to give you glucose intravenously to help you to recover.

Blood samples will be taken via the cannula at 30mins, 45mins, 60mins, 90mins and 120mins.

Blood sugar levels will be carefully monitored at the bedside throughout the test. At the end of the test the cannula will be removed and you will be given something to eat and drink. We will check that your blood sugar has returned to normal levels before you leave the department.

Risks

- Provided the Insulin Stress Test is carefully planned and done by experienced staff it is very safe. The unpleasant symptoms should only last for about 30 minutes and should get better even before eating.
- People with known epilepsy, who have had strokes, and people with known heart disease (heart attacks, angina, irregular heart rhythms) may have these problems provoked or worsened by the 'stress' of the low blood sugar – such people should therefore not have this test performed **Please tell the doctor or the endocrine nurse if you have any of these conditions which we are unaware of.**
- We also perform a routine ECG (heart tracing) before the test to make sure there is no sign of hidden heart problems which have not been recognised. There is still a theoretical risk that the stress of the test could provoke symptoms of such heart problems for the first time – but we believe that the risk is tiny having taken these precautions.
- A low blood sugar may bring on an epileptic fit in patients with epilepsy or with a susceptibility to epileptic seizures – therefore you should not have the test if you have any history of epilepsy, fits, or unexplained blackouts. Given these precautions the risk of a fit is extremely low.
- Severe prolonged lowering of blood sugar can provoke an epileptic fit in normal individuals and can cause brain damage in extreme cases –but our procedures for carrying out the test mean that we would correct the low sugar with a glucose infusion before this occurred. This is why we monitor you very carefully and why, if the blood sugar falls too low, we may give you glucose by injection into the vein.
- Patients with severe pituitary or adrenal deficiency may develop severe, prolonged low blood sugar or low blood pressure after insulin – we will have checked for these deficiencies by blood tests before the test.
- While most people feel completely well after the test, occasionally people may feel a bit shaky if they have had a particularly marked reaction to the insulin. *Therefore, although most people will be fine to drive home afterwards, you might wish consider getting a relative or friend to drive you in for the test rather than driving yourself.*

In our Department the test is always carried out by nurses and/ or doctors with experience in performing this test safely – with full medical help always available if required.

Given all these precautions serious side effects during an insulin stress test are very rare.