Glucagon stimulation test

Information for children, families and carers

We have given you this factsheet because your child's doctor has referred your child for a glucagon stimulation test to look at their growth hormone levels. It explains what a glucagon stimulation test is and what will happen at the appointment so you know what to expect and can help to prepare your child. We hope it will help to answer some of the questions you may have. If you have any further questions or concerns, please contact us using the details at the end of this factsheet.

What is a glucagon stimulation test?

The pituitary gland is a small, pea-sized gland that is located at the base of the brain. It makes several hormones (chemical messengers) which act on other parts of the body. One of these hormones is called 'growth hormone', which is needed for normal growth during childhood. A glucagon stimulation test measures the amount of growth hormone made by the pituitary gland.

Growth hormone levels in children and adults can vary a lot throughout the day and night. This is due to several factors, including:

- exercise
- stress
- sleep
- other hormonal changes

During the day, growth hormone levels in the blood are usually very low, making them difficult to measure. To allow us to accurately assess how much growth hormone your child's pituitary gland is producing, we need to stimulate the release of growth hormone. To do this, we will give your child an injection of glucagon (a hormone that is involved in controlling blood sugar levels).

Why does my child need this test?

Your child's doctor has recommended this test to check whether your child's pituitary gland is releasing enough growth hormone.

How should I prepare my child for the test?

Eating and drinking

Your child must **not** eat or drink anything, except for water, after midnight the night before the test. It is important that you follow this instruction, or we will have to cancel your child's test and reschedule it for another day.

Medication

If your child takes regular medication, please contact us before your child's test using the details at the end of this factsheet. Depending on the type of medication, we may advise your child to temporarily stop taking this before their test.

Items to bring with you

We recommend bringing in some form of entertainment for your child (for example, a book, toy, puzzle or game) as there will be periods of waiting throughout the test.

What will happen on the day of the test?

On the day of the test, please bring your child to the John Atwell day ward (please see your child's appointment letter for more details). When you arrive, a nurse or doctor will welcome you and answer any questions you or your child may have about the test. We will then ask you if you're happy to go ahead with the test.

For this test, we will need to insert a cannula (a very small plastic tube) into a vein in your child's arm or the back of their hand. We will ask your child if they would like us to apply a local anaesthetic (numbing) cream or spray to their skin before we insert the cannula. This will help to reduce any discomfort they may experience.

Once we have inserted the cannula, we will give your child a small dose of glucagon via an injection into their thigh or bottom. This may sting briefly. The glucagon injection will raise your child's blood sugar levels, stimulating their body to release growth hormone.

We will then take a blood sample from the cannula every 30 minutes for the next two to three hours.

Your child will not be able to eat or drink anything, except for water, during the test.

Blood sugar levels

The glucagon injection will affect your child's blood sugar levels. Typically, blood sugar levels will rise during the first hour of the test and then fall. We will monitor your child's blood sugar levels closely throughout the test and, if needed, we will give them a sugary drink such as apple juice or we will give them glucose (sugar solution) through their cannula.

To allow us to safely monitor your child's blood sugar levels, it is very important that your child stays awake during the test.

How long will the test take?

The test will take approximately three to four hours. However, you should expect to be on the ward for the whole morning. You will be able to take your child home around 1 to 2pm, as long as they have fully recovered from the test. We will let you know when it is safe for you to take your child home.

Will it hurt?

Having a cannula in place should not hurt your child as long as they do not move their arm around too much. To remind your child not to bend their arm that has the cannula in, we may put a splint and/or a bandage on their arm for the duration of the test.

What will happen after the test?

After the test, we will continue to observe your child closely.

Your child will need to eat and drink something substantial before going home. We can either order your child a meal from the hospital kitchen or you can choose to bring in a packed lunch or buy something yourself from the shop or café. **Do not** give your child 'fast foods', fizzy drinks, sweets or chocolate after the test as these can make them sick. Your child will need to stay on the ward while they have their lunch.

When your child has eaten their meal, a senior nurse will assess them and remove their cannula.

Most children typically recover within one to two hours after the test, but it can sometimes take longer. Very rarely, a child may need to stay in hospital overnight after the test to fully recover. If this is the case, we will discuss this with you.

Before you leave hospital, we will advise who to contact in the unlikely event that your child becomes unwell at home after the test. You will then be able to take your child home.

Are there any side effects?

Your child should not experience any long-lasting side effects from the test if they rest and eat well for the rest of the day. Your child should be back to their normal self by the next day.

Low blood sugar

To avoid low blood sugar after the test and once you have returned home, you should encourage your child to eat a carbohydrate snack mid-afternoon and before going to bed (for example, biscuits, toast or a sandwich). It is important that your child also eats well at dinner time to prevent their blood sugar becoming low. **Do not** give your child Lucozade or any other fizzy drinks.

The most common side effects of low blood sugar are:

- drowsiness
- hunger
- feeling sick
- sweating
- looking pale
- feeling grumpy or confused
- being sick (this is rare)

Giving your child a sweet drink, such as apple juice, should quickly reverse the above side effects of low blood sugar.

Very rarely, low blood sugar can cause children to have fits (seizures) and become unconscious.

Go to your nearest emergency department if your child:

- refuses to eat
- vomits
- is unusually drowsy

Are there any alternative tests?

Growth hormone can be measured in different ways. However, the glucagon stimulation test is the most suitable test for your child.

When will I receive my child's results?

Your child's results will usually be available after two weeks. We will contact you either by telephone or by letter once the results have been reviewed by your child's doctor.

We will discuss whether it is necessary for your child to have any further tests or treatment at their next clinic appointment with us.

Contact us

If you have any further questions or concerns, please contact us.

Paediatric endocrine nurse specialists
Telephone: **023 8120 8719** (Monday to Friday, 8am to 4.30pm)
Email: **pens@uhs.nhs.uk**

John Atwell day ward
Telephone: **023 8120 4511** (Monday to Saturday, 7.15am to 8.15pm)

Useful links

What? Why? Children in Hospital (WWCIH) - What happens in a blood test?
www.whatwhychildreninhospital.org.uk/cannula

www.childgrowthfoundation.org

www.bsped.org.uk

www.eurospe.org

If you are a patient at one of our hospitals and need this document translated, or in another format such as easy read, large print, Braille or audio, please telephone 0800 484 0135 or email PFSH@uhs.nhs.uk

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

Version 1. Published July 2025. Due for review July 2028. 3690