



Linogram studies

This information sheet explains about linogram studies of central venous access devices, what is involved and what to expect when your child has one at Great Ormond Street Hospital (GOSH).

What are linogram studies?

A linogram study looks at your child's central venous access device – either a central venous catheter (CVC), implantable port or peripherally inserted central catheter (PICC) – when it is not working as well as it should. A linogram can identify whether it is blocked or if there is a blood clot forming at the tip. It uses contrast liquid, which shows up well on x-rays, injected into the device.

Are there any alternatives?

Various types of study such as CT, ultrasound and x-rays can show the location of your child's central venous access device but not how it is working. The results of the study are used to make a decision about whether the device needs to be repaired or replaced.

The day of the study

A member of ward staff will bring your child to the Radiology department for the study. Your child will need to wear a hospital gown for this test but can keep a vest or t-shirt on underneath. Any metal on their everyday clothing, such as zips or buttons, will show up on the study, giving a misleading result.

Many of the studies we perform involve the use of x-rays. Legally, we are obliged to ask any girls over the age of 12 whether there is any chance they might be pregnant. This is to protect babies in the womb from receiving unnecessary radiation. We will also ask mothers or other female carers if they could

be pregnant, especially if they are planning to come into the room with their child. If you are pregnant, we suggest you bring another member of the family with you, to be with your child during the study instead.

The study

You will be able to stay with your child throughout the study. The doctor will ask your child to lie on the bed while they take some plain x-rays of the central venous access device. This will confirm where it is located and show if it has developed a hole or broken. They will then gently inject some contrast material into the end of your child's CVC or PICC or into the reservoir of your child's implantable port. If this is painful for your child, we will stop the injection and end the study. The contrast liquid will flow through the device and out into the bloodstream. The doctor will ask your child to hold their breath for a few seconds while the pictures are taken. Once enough pictures have been taken, they will flush the device with saline and if needed, lock it with heparin.

After the study

When enough pictures have been taken, your child will be able to get off the examination bed and get dressed. If they are not having any further tests or studies, they will be able to go back to the ward. The radiology doctor will send a report about the study to your child's doctor.



Are there any risks?

The contrast liquid will not interfere with any medicines your child is taking. It will be removed naturally by the kidneys and passed out of the body while peeing (urinating). You may be asked whether your child has any allergies. Some children can have a reaction to the contrast and asking about other allergies reduces this risk. While x-rays use radiation, the amount in an individual set of pictures is low compared with the background radiation we get from the environment. Each x-ray is calculated so that the best picture can be taken using the minimum amount of radiation.

When you get home

Your child should drink plenty of fluids for the next couple of days to flush the contrast out of their system.

**If you have any questions,
please telephone the Radiology
department on 020 7829 8615**

Compiled by the Radiology department in collaboration with the Child and Family Information Group
Great Ormond Street Hospital for Children NHS Foundation Trust, London WC1N 3JH
www.gosh.nhs.uk