

# Transcranial Doppler scanning

## Contents

- 3 What is Transcranial Doppler (TCD) scanning?
- 3 Why does my child need a TCD Scan?
- 3 What is a stroke?
- 4 TCD appointments
- 4 What happens during the TCD scan?
- 5 What do the results mean?
- 5 What happens next?
- 6 How long would the transfusions continue for?
- 6 What if I think my child has had a stroke?
- 7 Contact us
- 8 Where can I get further information?

## **What is Transcranial Doppler (TCD) scanning?**

TCD is a test that uses ultrasound to measure how fast the blood flows through the blood vessels within the brain. The machine detects the noise of the blood rushing through the vessels and uses this to measure the speed at which it is travelling. It is an extremely safe, easy procedure and is the only way to detect an increased risk of stroke in children with sickle cell disease. Dr Soundrie Padayachee is the specialist leading this service.

## **Why does my child need a TCD scan?**

In sickle cell disease, blood vessels can be damaged by the sickled cells sticking to the walls. This causes the blood vessels to narrow and potentially close up. If this happens in the brain, the blood gets cut off, starving the brain of oxygen and causing a stroke.

## **What is a stroke?**

A stroke is when the oxygen flow to part of the brain is reduced. This causes weakness in an arm or leg, difficulty talking or understanding what is said and/or memory problems. These problems may either be short-lived or permanent. Strokes can happen more than once.

## TCD appointments

TCDs take place in the Ultrasonic Angiology department at both hospital sites at the locations below:

### **St Thomas' Hospital**

1st and 12th Floors, North Wing

### **Guy's Hospital**

2nd Floor, Borough Wing

You will normally be contacted by telephone or text with an appointment. If the TCD team are unable to contact you this way you will be sent a letter.

If you need to change your appointment or **if your child is unwell** please contact the Ultrasonic Angiology department **phone:** 020 7188 6774.

## What happens during the TCD scan?

The test is done by the specialist radiologist in either the X-ray department or in the sickle clinic. No preparation is required beforehand.

The scan takes about 15 minutes and your child will be asked to lie on a couch and keep still. He/she will be awake and you may stay with them throughout the scan.

The scanner will run over the side of your child's neck and forehead and is painless. Afterwards you will be able to go straight home, although if the test is done in the sickle clinic, Haematology Consultants will be there to discuss the results with you.

## What do the results mean?

The results can be normal, conditional or abnormal.

- A **normal** result means that nothing needs to be done now, but the test will be repeated each year.
- A **conditional** result will mean that the scan should be repeated within three months.
- An **abnormal** result means that there is an increased risk of having a stroke in the future. If the result is abnormal, the scan will be repeated within a month and other tests may be arranged, such as an MRI (magnetic resonance imaging) scan or a special X-ray. Neither of these will be painful for your child. All the results will be sent to your Haematology Consultants for discussion with you. The treatment decision, however, will be based on the results of the TCD and not the MRI.

## What happens next?

Research has shown that giving a child regular blood transfusion (about every four weeks) can substantially reduce the risk of a future stroke. If your child's TCD results are abnormal and you consent to treatment, they should start regular blood transfusions as soon as possible.

## How long will the transfusions continue for?

The increased risk of stroke is highest between the ages of two and 16 (peaking at seven years of age). Studies have shown that once patients have received transfusions for at least 12 months and there is no significant narrowed blood vessels in the brain and the TCD has remained stable it may be safe to transition to a medication called hydroxycarbamide. The doctor will discuss the option of discontinuing transfusions with you and your child when the time is appropriate.

## What if I think my child has had a stroke?

We know that one in 10 children with sickle cell anaemia (HbSS or HbS $\beta$ 0) will have developed stroke by the age of 14 if nothing is done about it. It is important to report any symptoms of a stroke such as:

- weakness in an arm or leg
- difficulty speaking and/or understanding
- memory problems.

You should see a doctor immediately, even if you are on holiday, so that tests can be carried out to find out whether your child has had or is having a stroke. If a stroke is confirmed, you will be offered regular transfusions to help prevent further strokes in the future.

## Contact us

**Lead consultant for haemoglobin disorders, and consultant in haematology, phone:** 020 7188 6203 (secretary), **email:** Dudhma.Banu@gstt.nhs.uk

**Lead nurse, phone:** 020 7188 9432 or 07918 338730  
**email:** HaemoglobinopathyCNS@gstt.nhs.uk

**Nurse specialist, phone:** 07771 345847 or 07517 592436 **email:** HaemoglobinopathyCNS@gstt.nhs.uk

**Research nurse, phone:** 020 7188 6637 or 07517 592436

**Specialist nurse – community, phone:** 020 3049 5993 or 07880 781545

**Therapy and psychology team, phone:** 020 7188 9125 or 07817 905844

Help and advice will always be available if you have any questions or concerns. Out of hours, please call the hospital switchboard, **phone:** 020 7188 7188 and ask them to bleep the haematology registrar.

If you need to come to emergency department (A&E) at St Thomas' Hospital, please telephone the department before you arrive, **phone:** 020 7188 2111 and let them know about your child's condition. This will help to improve your child's care when you arrive.

## Further information

### **Sickle Cell and Thalassaemia Conference**

This annual international conference is held at Guy's and St Thomas', with world experts in haemoglobinopathies. For more information visit the websites below. If you are interested in attending, please email Dr Baba Inusa.

**website:** [www.scorecharity.com](http://www.scorecharity.com)

**website:** [www.ststn.co.uk](http://www.ststn.co.uk)

**email:** [baba.inusa@gstt.nhs.uk](mailto:baba.inusa@gstt.nhs.uk)

### **Sickle Cell Society**

Provides help and support for people affected by sickle cell disorders and their carers.

**phone:** 0800 001 5660

**website:** [www.sicklecellsociety.org](http://www.sicklecellsociety.org)

### **The Sickle Cell & Thalassaemia Centre**

Provides information about sickle cell disease.

Thalassaemia counsellors can also offer support and information. The centre can also direct you to local services.

**phone:** 020 7414 1363

### **Evelina London Medicines Helpline**

If you have any questions or concerns about your child's medicines, please speak to the staff caring for them or contact our helpline.

**phone:** 020 7188 3003, Monday to Friday, 10am to 5pm

**email:** [letstalkmedicines@gstt.nhs.uk](mailto:letstalkmedicines@gstt.nhs.uk)

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