

**What if the results show my child is at higher risk for possibly having a stroke in the future?**

If the TCD test is abnormal twice, your child's doctor will arrange an MRI and MRA and will talk to you about putting your child on chronic transfusion therapy.

Studies demonstrate that once a child has had a stroke, regular blood transfusions can prevent more strokes in the future. During chronic transfusion therapy, non-sickle cell blood is transferred into the body through an IV about every 4 weeks. This decreases the amount of sickle cells in the body and prevents new strokes related to sickle cell disease from occurring.

The decision whether to start transfusions in a child who has had abnormal TCD tests will be based on many things, including his MRI results and your and your child's thoughts on the subject. Your doctor should sit down with you and discuss this in detail, explaining the advantages and disadvantages before any decision is made.

**TCD SCREENINGS AVAILABLE IN  
INDIANAPOLIS AND LAKE COUNTY**

**INDIANAPOLIS**

**St. Vincent Hospital**

2001 W. 86th Street  
Indianapolis, IN 46260  
317-338-3224

**LAKE COUNTY**

**SonoGraphic Images, Inc.**

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**Remember:**  
**Transcranial Dopplers every year  
are an important part of  
keeping your child healthy!**

*Your Guide To*  
***Transcranial  
Doppler (TCD)***



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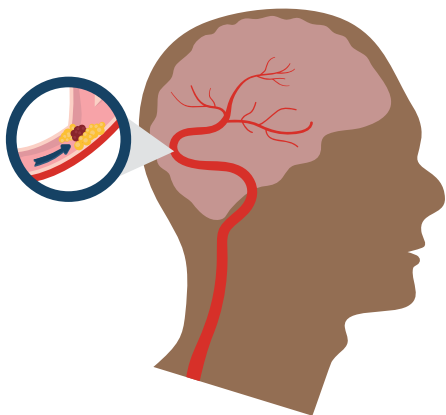


## What is Transcranial Doppler (TCD)?

TCD is a study that uses ultrasound (similar to the ultrasound that is used during pregnancy) to check for increased blood flow in the blood vessels of the brain. When blood vessels are narrowed, due to sickle cell damage, the blood flows faster as it travels through the narrow area. When the blood vessel is narrower there is a greater risk of having a stroke in the future.



## What is a stroke?



Strokes occur because of a problem with blood flowing through the vessels of the brain. When children have a stroke, it is usually because the arteries that bring blood to the brain are narrowed or closed off. If the brain is not getting enough blood, then certain parts of the brain may not get enough oxygen. This may result in problems such as weakness in an arm or leg, difficulty talking or understanding what others are saying, memory problems, or other losses

of brain function. Sometimes these problems go away, but sometimes they are permanent. In very severe cases there may be swelling of the brain and death.

## What will happen when my child has a TCD screening?

The test takes about 30 minutes, although it may take longer in some situations, especially with younger children. The test does not hurt, but your child needs to be relaxed and still during the test. He or she will be awake and lying on a table during the test. You will be able to stay with him or her. He or she can watch a video or listen to music or lay next to a parent if that makes them more comfortable.

## Why test children with sickle cell for stroke?

Children do not usually have strokes, but children with sickle cell disease are more likely to have a stroke than other children. About 5-10% of children with sickle cell anemia (Hb SS) or sickle beta thalassemia zero (Hb S  $\beta^0$  thalassemia) will have a stroke. In other words, we can expect that out of 100 children with sickle cell disease, about 5 to 10 may be at risk for having a stroke before the age of 15 years. This is 300 times more likely than in children without sickle cell disease.



Children who have a type of sickle cell disease other than SS or S beta 0 thalassemia (like Hb SC or Hb S  $\beta^+$  thalassemia) typically do not need to get TCDs. Talk to your child's sickle cell doctor about whether your child needs to be tested.

## What happens after the test?

The results will be sent to your child's sickle cell doctor and primary care provider. If the test is normal, nothing needs to be done and the test will be repeated at least once a year until your child is 16 years old. If the test results are abnormal (findings of fast blood flow, indicating possible blood vessel narrowing) or conditional (either because the test was difficult to do, or because the results are only slightly abnormal), your child will need a repeat TCD. Your child may also be scheduled for other tests such as an MRI and MRA as well.

It is important to understand that TCD is a test that checks to see if a child may be at risk for having a stroke in the future. If your child ever has any of the symptoms of having a stroke (weakness in an arm or leg, trouble speaking or understanding, memory problems), you need to contact 911 and your child's sickle cell doctor right away to be evaluated in the Emergency room. Here the medical team can run other tests to confirm and treat a child who is having a stroke.