

## Stroke and TCD Screening

### What is a stroke?

Strokes occur because of a blood circulation problem to the brain. If the blood flow is decreased, parts of the brain do not get the oxygen necessary for the brain to function. A stroke 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. These problems may be temporary or permanent. If you see these signs in yourself or your child see your doctor urgently. Early treatment can limit the disability that can occur after a stroke.



### What is transcranial doppler (TCD)?

TCD is a test that uses ultrasound (similar to the ultrasound used during pregnancy) to detect areas of increased flow in the blood vessels of the brain. The TCD test is painless and harmless. Your child will need to lie on a bed and we will put a small amount of gel on a flat probe and place it on each side of your child's head (just above and in front of the ear). This is where we will best be able to hear the blood flow in the vessels we are testing. The test usually takes about 30-40 mins but may take longer in younger children. You may stay with your child during the test. Your child must be well (no recent illnesses) and must stay awake during the test.

### What will the TCD result tell me?

TCD measures how fast the blood is flowing through the blood vessels supplying the brain. When blood vessels are narrowed due to sickle cell damage, the blood flows more quickly through those blood vessels. When blood vessels are narrow, it is easier for them to become blocked and so the child is at a higher risk for having a stroke.

### What happens after the test?

It may take a few days to read and interpret the test results. You will be seen again to discuss the test results. If the test is normal, nothing needs to be done, although your child will be retested once a year until the age of 16 years. If the test results are positive (findings of fast blood flow, indicating possible vessel narrowing) or questionable (either because the test was difficult to do, or because the results are only slightly positive), another TCD screen will be scheduled. Other tests such as a MRA (magnetic resonance angiography) - another painless imaging test, may be advised at that time.

It is important to understand that TCD is a test that tells us if a child may be at risk for having a stroke *in the future*. If your child displays any of the symptoms of having a stroke (e.g. sudden weakness in an arm or leg, difficulty speaking, seeing or understanding), you must see a doctor *immediately*. If in doubt, go to the nearest Accident and Emergency so that other tests can be done to determine if your child is having a stroke.

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

If the test is abnormal 2-times in a row, then your doctor will discuss treatment options with you. In many countries, blood transfusions are given every 4-6 weeks to prevent a stroke from happening. A study has shown that regular blood transfusions, in children who have abnormal TCD tests, decrease the risk of getting a stroke in the future. **Transfusions, once started, must be continued for life.**

In many countries, including Jamaica, it is very difficult to arrange for blood transfusions every month for children with SCD. If your child's TCD is not normal, and you live in a place where blood transfusions cannot be done regularly, your doctor will discuss using a medication called hydroxyurea (HU) instead. There is some evidence in the medical literature that HU can decrease TCD levels. This should reduce the risk of having a stroke. A study in Jamaica has also shown that, in children who have had a stroke, HU can decrease the risk of having another stroke.