How is epilepsy diagnosed?

By definition **epilepsy is 'a tendency to have recurrent seizures'.** If only one or two seizures have occurred the doctor may be reluctant to make any kind of diagnosis unless test results were totally conclusive. It is possible for anyone to have a seizure if the conditions are right. Everyone has a seizure threshold and approximately 5% of children will have a seizure at some time during childhood (Buchanan, 1995).

Following a seizure, your child should visit their doctor for assessment. They will need a complete medical history, including:

- A description of the seizure(s) from those who observed it, this is vitally important. The diagnosis will be based on this description, the results of tests may support it but epilepsy is still mainly diagnosed upon what actually happened and under what circumstances. (See description of seizure form, in this kit).
- The child's description of what s/he experienced before, during and after the seizure.
- A list of the events leading up to the seizure.
- Information about any other unusual events (twitching of a finger, toe, arm or leg; short periods of unresponsivenes).
- General physical and neurological exams (blood tests, EEG, MRI scan, CT scan).

To ease the child's fears and prepare them for medical tests, parents should provide as much information as possible a way that the child will be able to understand.

What tests might my child have?

The child should know:

- Why the test is being done.
- Where the test will take place.
- What will happen during the test?
- Who the people involved in the testing are.
- What medical equipment will be used?

Below is an outline of tests used to help diagnose epilepsy. For more specific information ask your doctor or local epilepsy association or the relevant departments at your local hospital.

Computerized Axial Tomography (CT or CAT) Scan

This test is not as sensitive as an MRI scan and is therefore used to detect more obvious brain damage or abnormalities (distortions of the skull or brain) which may cause seizures.

The person lies on a table, and the head of the table is placed into the CT unit. Pictures are taken at many angles to generate the brain images. The test is painless except for the discomfort of a possible injection of dye if required during the procedure. An occasional person is allergic to the dye: this may cause a skin rash and rarely difficulty with breathing. As complete stillness is required during the test, young children may require sedation or a light general anaesthetic. The entire procedure takes from 30 – 45 minutes.

Electroencephalogram (EEG)

The EEG is a painless diagnostic test, which records the electrical impulses from the brain. Not all abnormal wave patterns indicate that someone has epilepsy, but neither does a normal test result mean someone does not have epilepsy.

The child's scalp must be clean and oil-free so electrodes used during the test will work effectively. On the day of the test, the child should eat normally and take all medications as prescribed.
Your doctor will discuss whether your child requires light sedation prior to testing. During the test, an EEG technician will place a number of electrodes on the child's scalp using a conductive gel. The child is asked to keep very still as movement can actually hide what is happening. The child may then be asked to do simple tasks, e.g.

- to open and close his/her eyes several times
- to take deep breaths for approximately three minutes
- to look at a flashing light.

The EEG test usually takes 60 to 90 minutes. The results of the test are considered along with the results of other tests and with the patient's clinical history to help the doctor in his diagnosis.

Magnetic Resonance Imaging (MRI)

MRI can detect very subtle abnormalities of the brain which CT scans cannot record.
Prior to the test, the child should eat normally and take all medications as prescribed.

At the hospital, all jewellery, hairpins, glasses and other metal objects must be removed. The child will be positioned on a scanning table with his/her head positioned on the head rest. When the table slides into the magnetic chamber, the child must lie still as the images are taken. Light sedation may be required for very young children. The child won't feel anything but s/he will hear noises from the machine (as radio waves are emitted and the machine moves). It is important for the child to know about the noise in advance so s/he will keep still and not panic. Procedure usually takes 30 – 60 minutes.

EEG/Video monitoring

At times it is necessary to perform simultaneous EEG and video recording during symptoms.The child will be admitted to hospital for several days to observe actual symptoms and possibly seizure activity. Sometimes medication will be reduced or withheld to try and induce seizures.

Blood Tests

Blood tests can be used to determine the health of the liver, kidneys and other body organs. Results of these tests can help doctors determine if there is an underlying cause responsible for the seizures.

References:
Buchanan, N. (1989) *Epilepsy Questions and Answers*. Artarmon, NSW: MacLennon & Petty Publishers
Hanscomb, A., Hughes, L. (1995) *Family Health Guide EPILEPSY*. London: Ward Lock • NEAA (1998) *Evaluating Epilepsy pamphlet*
Gram, L., Dam, M. (1995) *Epilepsy Explained*. Copenhagen: Munksgaard