

Dietary Therapies for Epilepsy

Dietary therapy is a recognized treatment for epilepsy in children and is offered by many epilepsy care centers. It is usually tried in children for whom surgery is not an option, if 2 or more anti-epileptic medications have failed to control seizures or if the medications cause very severe side effects. Although it does not work for every child, it can produce dramatic results in some children.

All forms of dietary therapy for epilepsy involve restricting carbohydrates and increasing fat in the diet. The traditional ketogenic diet, in which about 90% of the calories in the diet come from fat, has been used to treat epilepsy since the 1920s with significant success. More recently, less restrictive diets that allow a wider range of

foods have been developed. Not all treatments are available at all epilepsy care centres.

- The traditional or "classic" ketogenic diet usually involves a ratio of 3 to 4 g of fat to every 1 g of protein plus carbohydrate. Some children may need a slightly different ratio. Children on the ketogenic diet have to eat mostly fatty foods, like butter and cream. They cannot eat starchy foods like bread and pasta.
- The medium-chain triglyceride (MCT) diet includes a supplement (MCT oil) containing fatty acids called medium-chain triglycerides. Children are able to eat more protein and carbohydrate with this diet than with the classic ketogenic diet. However, it is less widely available.

Jack's "Magic Diet"

The ketogenic diet is a form of dietary therapy for epilepsy. Jack calls it his "magic diet".

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- The modified Atkins diet, as its name suggests, is a modification of the Atkins diet for weight loss. Children on this diet can eat no more than 10 g of carbohydrate per day at first, and get about 65% of their calories from fat. The modified Atkins diet was first described as a treatment for epilepsy in 2003.
- The low glycemic index treatment (LGIT) allows more carbohydrate than the other three diets. However, all the carbohydrate the child eats must have a low glycemic index, which is a measure of how much a particular food raises blood glucose (sugar). The LGIT was first described as a treatment for epilepsy in 2005.

Whichever diet is chosen, it must be strictly followed to give it the best chance of working. The treatment must be carefully monitored by a specially trained team, including a physician and a dietitian.

Dietary therapy for epilepsy should not be regarded as more natural than medications or a safer way of treating epilepsy. Just like medications, dietary therapies have side effects and are not right for all children. And like medications, dietary therapies are not a “miracle cure”: as with any other treatment, some children will have complete seizure control, some children will still have some seizures, and some children will see no effect.

Unlike some forms of treatment, dietary therapy requires a high degree of collaboration between the child, parents, dietitian, and doctor. The parents are ultimately the main implementers of

this treatment: it is the parents who must manage the specific foods and the feedings.

Dietary therapy can be used on its own or along with anti-epileptic medication. If children become seizure-free while using dietary therapy, the treatment is usually continued for at least 2 years. If one diet is working well to control seizures but the family finds the diet difficult to follow, it is sometimes possible to try switching from one form of dietary therapy to another.

How does dietary therapy work?

Our bodies usually burn glucose (carbohydrates) for energy. When the body does not have carbohydrates available for fuel, it will use fats instead. When the body uses fat as fuel, it produces ketones. This situation is called ketosis. The brain can use ketones instead of glucose as a source of energy.

Doctors and researchers do not know exactly why diets that produce ketosis are effective for controlling seizures. Studies have not found a consistent relationship between ketone levels in the blood and seizure control. Controlling blood sugar levels may also be a factor in controlling seizures. Research in this area is continuing.

Who should use dietary therapy?

Dietary therapy is usually tried in children for whom surgery is not an option, after 2 or more anti-epileptic medications have failed to control seizures or in cases where the medications cause very severe side effects. In order for dietary therapy to have a chance of working, the child and family must be highly motivated to learn how to use it correctly. Dietary therapy requires

consistent effort by the parents to make it work. It also requires the child's cooperation.

Dietary therapy has been found to be effective for all seizure types. It has shown success in treating "drop" type seizures and epileptic encephalopathies such as Dravet syndrome, myoclonic-astatic epilepsy, and Lennox-Gastaut syndrome.

Dietary therapy has had success in children aged 12 months to 12 years, but has also been used in

older adolescents and even adults. It may be possible to use it with even younger babies, using a special infant formula, if more specialized staff and closer monitoring are available.

Children who are fed by a gastrostomy tube (G-tube) can use the ketogenic diet. It is given as a liquid formula through the G-tube.

