

What is a ketogenic diet?

A medical ketogenic diet is a special diet used to help treat epilepsy. The ketogenic diet:

- Is made up of foods that are high in fat.
- Has enough protein (meats).
- Is very low in carbohydrates (starches and sugars).

There are different types of medical ketogenic diets. Your child's doctor and dietitian (also called a nutritionist) can help find the right type for your child. Only try a ketogenic diet with the help of your child's care team.

When is the ketogenic diet used?

The ketogenic diet can be used for children as a medical nutrition therapy for epilepsy when medicine has not controlled seizures. The ketogenic diet is the first choice treatment for 2 genetic conditions:

- Glucose transporter protein I deficiency syndrome
- Pyruvate dehydrogenase deficiency

What are the different types?

The ketogenic diet can be for children who eat by mouth or by tube feedings. All ketogenic diets have more fat than protein and carbohydrates. Types of ketogenic diets include:

- **Classic ketogenic diet**
 - This diet provides the most structure with exact recipes and requires all foods to be weighed on a gram scale.
 - Classic ketogenic diets are based on ratios of fat grams to non-fat grams. Non-fat grams are protein and carbohydrates.
 - Common ratios on a classic ketogenic diet are 3:1 and 4:1. For example, a 4:1 ratio diet has 4 grams of fat for every 1 gram of protein and carbohydrate combined.
- **Modified ketogenic diet**
 - This diet is a lower ratio version of the classic ketogenic diet and most often uses 1:1 and 2:1 ratios.
 - You may either weigh foods on a gram scale or estimate portion sizes with household measurements.
- **Modified Atkins diet**
 - This diet is more flexible than the classic diet.
 - The Modified Atkins diet is based on counting carbohydrates.
 - Carbohydrates are often limited to 10 to 40 grams every day.
- **Low glycemic index treatment**
 - This diet allows for greater amounts of carbohydrates that are low (less than 50) on the glycemic index.
 - Carbohydrates are limited to 40 to 60 grams per day.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

Medical ketogenic diets, continued

How does it work?

The body normally uses sugar (glucose) from carbohydrates in the diet as its energy source. When you eat very few carbohydrates, the body:

- Burns fat for energy instead.
- Makes ketone bodies that the brain can use for energy instead of glucose.

With the ketogenic diet, ketones will rise to a high level in your child's body. This is called ketosis. For some children, being in ketosis can help control seizures. Your child may need both the diet and medicines to control their seizures.

Will the ketogenic diet work for my child?

Studies show that of all patients put on a ketogenic diet, about half of them have at least 50 percent less seizures. Seizure freedom (no seizures) happens in about 10 to 20 percent of people.

What will my child eat on a ketogenic diet?

When your child is on a medical ketogenic diet:

- They will limit major food groups, such as fruits and starchy vegetables, and avoid grains.
- They may eat smaller meals than before because the diet is very high in fat. Fat has more calories than proteins and carbohydrates.
- A dietitian can help if your child has food allergies or special dietary restrictions.
- There are special ketogenic formulas available if your child needs tube feedings.

Most often, meals include a:

- Fat source, such as butter, heavy cream or oil
- Protein (meat)
- Limited amounts of vegetable or fruit

Stricter versions of the ketogenic diet do not allow candy, cookies, pasta, bread, potatoes, rice, cereal, crackers, soda or juice.

What are the possible side effects?

Some possible side effects include:

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| • Constipation | • Hypoglycemia (low blood sugar) |
| • Reflux or vomiting (throwing up) | • Excess (too many) ketones |
| • Kidney stones | • Sleepiness |

Talk with your child's doctor if you have any questions or if any of these are already a problem for your child. Most side effects can be managed by making small changes in your child's diet or medicines. Do not try a ketogenic diet without working closely with your child's doctor.

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Medical ketogenic diets, continued

What is involved in using a ketogenic diet?

Medical ketogenic diets are a lifestyle change. Here are a few tips that may help make the diet easier to follow:

- Follow a routine. Have your child eat meals and snacks on a set schedule.
- Drink water. It is important for your child to stay hydrated. Start replacing sugar-sweetened drinks (such as juice and sports drinks) with water.
- Try common ketogenic diet foods at home to find things your child likes. These include butter, mayonnaise, coconut oil, avocado, heavy whipping cream, sour cream and cream cheese.
- Work on feeding skills. Before starting the diet, talk with the doctor if there are any concerns about your child's ability to safely eat, drink or swallow.

How often will my child need ketogenic diet clinic visits?

Your child will need regular visits with the ketogenic diet team. Most often, this is every 3 to 6 months. The team will go over your child's growth, labs (such as blood tests) and medicines during these visits.

How long will my child need the ketogenic diet?

The ketogenic diet is often a temporary treatment for seizures. Your child will try the diet for 3 to 6 months to see if it helps reduce their seizures. If the diet is helpful, it may be continued for 2 to 5 more years or longer. Certain genetic conditions require following the diet for life.

Where can I learn more?

Ask your child's neurologist or dietitian for more details. You may also visit these websites:

- epilepsyfoundation.org – The Epilepsy Foundation
- charliefoundation.org – The Charlie Foundation
- Matthewsfriends.org – Matthew's Friends

Children's Healthcare of Atlanta has not reviewed all of the sites listed as resources and does not make any representations regarding their content or accuracy. Children's Healthcare of Atlanta does not recommend or endorse any particular products, services or the content or use of any third party websites, or make any determination that such products, services or websites are necessary or appropriate for you or for the use in rendering care to patients. Children's Healthcare of Atlanta is not responsible for the content of any of the above-referenced sites or any sites linked to these Sites. Use of the services referenced and/or links provided in this manual is at your sole risk.

This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.

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