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DIET: KETOGENIC For Anticonvulsive Therapy

The ketogenic (keet-oh-JEN-ick) diet is a special very high fat and low carbohydrate diet. It can be used as a treatment for children when their seizures cannot be well controlled with seizure medicines.

HOW THE DIET WORKS

The human body uses carbohydrates for energy. The ketogenic diet is very high in fat, but low in carbohydrates. When carbohydrates are not available, the body uses fat for energy, and *ketones* are produced. Ketones may help control seizures.

WHO IS SELECTED FOR THE DIET

The ketogenic diet team is made up of doctors, nurses, dietitians, a psychologist, a pharmacist, and a social worker. The team reviews the medical history to see if your child can be considered for this treatment. Certain conditions must be met for a child to be considered:

- The child must be between one and ten years of age.
- He or she has had two or more courses of treatment with anti-seizure medicines without success.
- The child is currently a patient of a neurologist at Nationwide Children's Hospital.
- Family, school, friends and other caregivers, such as the baby-sitter or daycare, understand and support the treatment.
- To start the diet your child will be admitted to the hospital for about 3 days.

The minimum time to try the diet is one to two months. During this time it is VERY IMPORTANT for the family to understand that the ketogenic diet will affect the lifestyle of the whole family. Everyone who is involved with the child's care needs to understand that EVEN ONE FOOD ITEM THAT IS NOT ON THE DIET may make the seizures come back.

FOOD LIMITS AND RESTRICTIONS

The *kinds* of foods your child may eat will be limited. The *amount* of food he is allowed to eat may also be less than before.

Carbohydrates – Carbohydrates are found in fruits, vegetables, breads, cereals, and milk. The body needs some carbohydrates, but if the body has too many carbohydrates, ketones will not be produced. This means your child may not have pasta, bread, candy, cookies, or dairy products.

Protein – The ketogenic diet provides the minimum amount of protein needed for growth. If the amount of protein is too high, not enough ketones will be produced. If the number of ketones are too low, the diet will not control seizures.



Picture 1 Whipping cream and butter are sources of fat.

FOOD LIMITS AND RESTRICTIONS (continued)

Fat – Fat will provide most of the calories in your child’s diet. Heavy whipping cream is the major source of fat and half the carbohydrates. Other sources of fat are butter, mayonnaise, and salad oil or cooking oil.

Liquids - Fluids will also be limited. The dietitian will decide the amount of fluid your child needs. Only liquids that contain no carbohydrates are allowed. They include water, caffeine-free diet soda, and artificially sweetened Kool-Aid®. The heavy whipping cream used on the diet is also a source of fluids.

Calories – The total number of calories allowed each day will be based on your child’s weight, age, and weight history. Your child’s growth may slow down while on this diet. This diet is also limited in vitamins and minerals, so your child will need to take a vitamin and mineral supplement.

Medicines – Parents must tell the ketogenic diet team about **all** medicines that their child is taking, including non-prescription medicines like Tylenol® or cough medicines. All medicine must be carbohydrate-free forms, or they must be figured in the diet as needed. Avoid chewables and syrups as these products are likely to have high sugar content.

All food and liquids your child has **must be weighed and measured**. It is important that your child eats **ALL** the food and drinks **ALL** the liquids allowed for each day.

POSSIBLE SIDE EFFECTS

- Slower growth while on the diet
- Constipation
- Osteoporosis (thinning of the bones)
- Kidney stones
- Hypoglycemia (low blood sugar)
- Increased cholesterol
- Irritation of the pancreas

WHEN TO CALL YOUR DOCTOR

Call your child’s doctor **IMMEDIATELY** if any of the following occurs:

- You’re unable to awaken your child.
- Your child becomes pale, has a sweaty forehead and rapid pulse; becomes dizzy or nauseated.
- Sudden decrease in the amount of urine
- Dark brown or red urine
- Vomiting
- Seizures get worse or happen more often
- Refuses to eat
- Bruises easily
- Bleeding of the gums



Picture 2 Call the doctor if your child gets pale, sweaty, dizzy or nauseated.

KEEPING A RECORD

While your child is on the diet it is important to keep a record of the pattern and number of seizures your child is having. This is first done before starting the diet to see what your child's *baseline* seizure activity has been before starting the diet. (Refer to the Helping Hand, *Seizure Care*, HH-I-61.) You will be given calendars or "seizure logs" to help you with this.

OTHER INFORMATION

- Your child will take vitamin and mineral supplements. (These supplements may also help if constipation becomes a problem. Be sure to tell the ketogenic diet team if your child has constipation.)
- Blood tests will be done to check for baseline levels to make sure your child is not at risk while on the diet.
- Your child's rate of growth will be checked at follow-up visits.

MORE ABOUT THE KETOGENIC DIET

The ketogenic diet was developed in the early 1920's when it was found that patients who fasted had decreased seizures or no seizures. Although it has been used off and on in the past, it has recently been used more often because of work done at Johns Hopkins. Research shows that under certain conditions the diet is more agreeable and acceptable to the child and family than other treatments.

For more information about the ketogenic diet, contact the Nationwide Children's Hospital Neurology Department at (614) 722-4625.