

Complications of KD

Short term

- Vomiting
- Constipation
- Micronutrient deficiencies
- Behavioral problems

Long term

- Renal stones: 3-5%
- Growth problems
- Dyslipidemias
- Rare: pancreatitis, cardiac arrhythmias

Home Monitoring:

- Test the urine each morning before breakfast and each evening between 4-5 pm urine ketones should be 2+ to 3+
- Daily weight record

Follow up

- Come for follow up on appointed day and time
- Come for regular follow up
- Get your seizure log file, weighing scale, ketodiastix, ketone charts on each visit

Discontinuation of KD

- Timing / method – individualized
- At least 3 Months before you think of giving up if unsuccessful
- 2-3 yrs –successful
- Longer / lifelong- Few specific metabolic conditions
- By decreasing Ratios

Other Dietary Therapies

Modified Atkins Diet

- Less restrictive diet than ketogenic diet
- Carbohydrates intake restricted to 10 grams/ day.
- Fats (e.g. cream, butter, oils, ghee) encouraged.
- Proteins (cheese, fish, eggs, chicken, soya products) unrestricted.
- Clear carbohydrate-fluids not restricted.
- Calcium and multivitamin supplementation

Low Glycemic Index diet (LGIT)

- Glycemic Index (GI) is a term used to measure the speed at which carbohydrates break down in the digestive system to form glucose.
- Glucose is set at 100, and all foods are indexed against this number. So foods that are quickly digested have a high G.I., and foods that are digested more slowly have a lower G.I
- Any food rating less than 55 in the G.I. is considered low and are allowed in this regimen.
- Unlimited amount of ghee, oil, butter, vegetable oils, eggs, fish, meat, mutton, chicken, soyamilk, soya flour as per the child's tolerance is allowed.

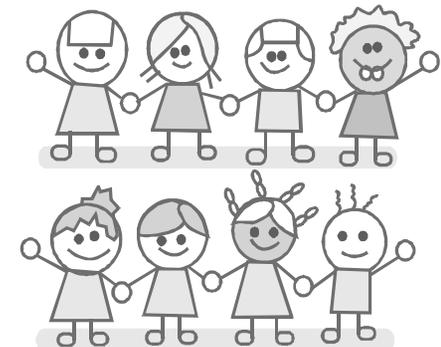
DIETARY THERAPIES AVAILABLE IN EPILEPSY

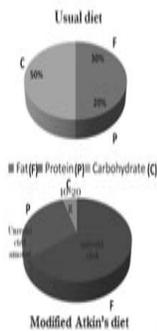


- **Ketogenic Diet (KD)**
- **Modified Atkins Diet (MAD)**
- **Low Glycemic Index Diet (LGIT)**



DIVISION OF CHILD NEUROLOGY DEPARTMENT OF PEDIATRICS AIIMS





Food for freedom from epilepsy!

What is Ketogenic Diet (KD)

It is a strictly calculated high fat, low carbohydrate diet, restricted protein which produces ketosis.

Ketosis is an alternative brain fuel and is believed to stabilize neuronal membranes for seizure reduction.

Indications of ketogenic diet

Benefits reported	Other putative conditions with reported benefit
Refractory epilepsy : All seizure types- absence, complex partial, atonic, myoclonic, mixed; with <ul style="list-style-type: none"> • Some specific metabolic problems • Tuberous sclerosis • Rett Syndrome • Infantile spasms 	<ul style="list-style-type: none"> • Brain tumors • ALS • Alzheimer disease • Parkinson's disease • Autism • Stroke • Traumatic brain injury • Narcolepsy

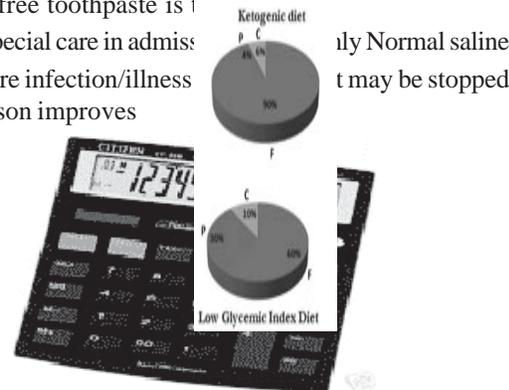
Benefits of KD	
Improves	Decreases
<ul style="list-style-type: none"> • Cognition / alertness • Attention • Social function • Sleep !, quality better 	<ul style="list-style-type: none"> • Use of antiepileptic drugs

Contraindications to ketogenic diet

- Known surgical focus
- Fatty acid oxidation defects
- Porphyria
- Inability to maintain adequate nutrition
- Parental reluctance to initiate or erratic compliance

Pre initiation counseling

- Emphasize exactness and restrictiveness of the diet.
- Maintain seizure diary noting down the number of seizures per day, and the seizure type and duration.
- Continue the anti-seizure medications as prescribed.
- A full knowledge of the possible side-effects and their management
- Demonstration of weighing, preparation, presentation and feeding of sample recipes
- Demonstration of urine testing and recording of results in the chart
- Medications (AEDs) must be sugar-free
- For any other illness also use sugar-free medicines
- Sugar-free toothpaste is
- Take special care in admis
- In severe infection/illness till person improves



Dietary history :

Model diet with required ratios is calculated using information on:

- Eating Habits
- Number of meals
- Timings
- Preferences
- Approximate calories per day etc.
- Ethnic Background - any food taboos

Administration of KD

Classic KD: 4:1 ratio- fat: Carbohydrate + protein although now lower ratios 2.5:1 or 3:1 are also used

Protocol used: Non-fasting gradual KD initiation



Few tips for preparation

- All meals are precisely calculated to fit a ketogenic ratio (grams of fat : grams of carb + protein)
- All foods must be weighed on a digital gram scale
- Gather several small bowls or containers for weighing ingredients.
- Weigh all dry ingredients before preparing recipes
- Meats should be lean with fat removed
- Fish and poultry should be skinless and boneless
- Eggs should be beaten uniformly and weighed
- After weighing a dry ingredient, you may 'zero' the scale to carefully add another dry ingredient to the same container. Weigh the higher volume ingredients last
- Pure vanilla flavoring up to 15 drops a meal has no food value and can be considered free.
- Use aluminum foil to line baking containers. This will keep the fat from seeping away from the product. Do not use paper liners as they will absorb the fat.
- Recipes may be batched to save time. Refrigeration is a must for this. Make a batch recipe by multiplying each ingredient by 10. Weigh the final product then divide this weight by the weight of a single recipe. This will give the weight of a single serving, then weigh out 10 single servings.

Precautions

- No sweet foods or sugars are allowed
- All medicines and labels should be sugar free. Check they do not contain sorbitol
- The fat intake should be spread evenly during the day, including giving some at bed time.
- Sweeteners used should be pure saccharine
- Vitamin and mineral supplements are to be taken to prevent deficiency
- Sugarfree toothpaste: Available currently Vicco/ meswak
- Maintain the meal timings