

Ketogenic Metabolic Therapy and Mental Health

Summarized by Thomas T. Thomas

A registered dietician and nutritional therapist, **Stephanie Criteser, RD, CSP**, spoke at NAMI East Bay's fourth Wednesday educational meeting on February 28. She has 12 years of experience in both inpatient and outpatient settings. For eight years at Children's Hospital Colorado, she helped patients with neurological and metabolic disorders, including epileptic seizures, implement and sustain diet care plans, offering clinical services that support the use of ketogenic metabolic therapies for management of mental health conditions. For the past year, she has been a consultant with [Advanced Ketogenic Therapies, LLC](#).

“The ketogenic diet for epilepsy has been used for more than one hundred years, since 1921,” she said, “for patients who are not responding to anti-seizure medications. However, it is unknown how the diet works on seizures—although there are a lot of theories. And this is not a first-line therapy.” Criteser noted that the portion sizes of the keto diet for epilepsy are very specific. In her experience, the children with epilepsy must follow a very strict diet.

The ketogenic diet became viral in the 2010s with the influence of various celebrities, including the Kardashians, and was popular for weight loss. It is similar to the Atkins diet of the early 2000s, which brought awareness and new tools to market.

Concerning the connection between ketogenics and mental health, children being treated for epilepsy with the diet said that it was “like a cloud has been lifted.” They were able to focus better and had more energy. Psychiatrists who have used the diet to control the weight gain their patients experienced with some psychotropic medications started to see the connection between a low-carbohydrate/high-fat diet and mental health. Some of the doctors studying this connection include [Chris Palmer, MD](#); [Georgia Ede, MD](#); and [Shebani Sethi, MD, ABOM](#).

There are no double-blind clinical trials of the ketogenic diet for mental health, or not yet, although some group experiments are described below.

Dr. Palmer wrote a 2016 case study describing a 33-year-old male with schizoaffective disorder who had tried 17 different medications without success and was experiencing sedation and weight gain. He tried the low-carb/high-fat diet and within weeks had lost weight, felt less sedated, and made eye contact with the doctor, which he hadn't done before. Within two months, the patient had fewer hallucinations and was thinking less in terms of conspiracy theories. In the long term, he lost 150 pounds, moved out of his father's house, and completed a certification program.

The keto diet restricts carbohydrate intake and increases fats. In human metabolism, carbs are converted into glucose for energy. The keto diet forces the body to turn to fat for energy, converting it into ketones. The diet consists of 70% to 90% calories from fats; 10% to 15% of calories from protein; and only 5% to 10% of calories from carbohydrates like bread and pasta. If you ate only a protein diet, even

one with lots of fat in the meat or dairy, you would not achieve ketosis, because many proteins are also turned into glucose. Because fat has double the calories per gram of meat or carbs, the meals will look smaller in volume and still provide sufficient calories.

In the ketogenic diet:

- **Fats** can come from oils like olive oil, avocado oil, walnut, or flax seed oils. They can be in the form of butter or ghee (a refined form of butter), mayonnaise, heavy whipping cream, coconut cream, or avocados.
- **Protein** can come from meat, poultry, fish and shellfish, eggs, cheese, nuts, and tofu or tempeh (a form of fermented soybeans). So, the ketogenic diet is not incompatible with a vegetarian diet.
- **Carbohydrates** can come from non-starchy vegetables like leafy greens, fruits (mostly berries), dairy (but not low-fat forms), yogurt, whipping cream, and various “milks,” such as from almonds or coconuts—but not from breads and pastas. You can also take vitamin and mineral supplements.

“But we want people to eat the cleanest versions possible,” she said, “rather than processed foods. And they should try to get the minerals from their diet.”

Criteser offered the following as sample meals:

- **Meal 1:** 3 eggs scrambled, 2 tablespoons of butter, 1/4 cup of green pepper (perhaps making an omelet), 1/2 cup of raspberries or strawberries, and 2 tablespoons of whipping cream.
- **Meal 2:** a 2- to 3-ounce hamburger patty (about the size of a deck of cards), 1 ounce of sliced cheese, 3 cups of leafy greens, 2 tablespoons of ranch dressing, 1 tablespoon of oil, 1/4 cup of macadamia nuts.
- **Meal 3:** a 3-ounce salmon filet, 2 tablespoons of butter-garlic-herb sauce, 1/2 cup of guacamole, 1 cup of cucumber, carrots, or tomatoes.
- **Snacks:** nuts and seeds, berries with high-fat yogurt or cream, hard-boiled eggs with mayonnaise, non-sugar peanut butter and butter balls, and “fat bombs” (unbaked, refrigerated balls of butter, peanut butter, cocoa butter, etc. with cocoa powder, berries, or other keto-friendly ingredients).

When eating out, Criteser recommends ordering a cobb or Caesar salad with extra amounts of an oily dressing, a meat or fish filet with green veggies and extra butter, or a cheeseburger without the bun and extra mayonnaise or MCT oil.¹

Meals prepared for home delivery include [Factor Keto Meals](#) and [Home Chef Keto-Friendly Meals](#). “But,” she warns, “these meals often have too-high carbs and too-low fats.”

Ways to improve the ketogenic diet include lowering protein intake, intermittent fasting (timing food intake, such as fasting for 16 hours a day and eating only during 8 hours of the day—which can keep you from snacking before bedtime), using MCT oils, and reducing the use of artificial sweeteners. On the other hand, being on multiple medications can lower the body’s ability to make ketones. You can also improve

¹ Medium Chain Triglyceride (MCT) oil contains medium-chain fatty acids rather than long-chain fatty acids. The body can more easily convert these fatty acids into ketones. Examples include coconut oil and palm kernel oil.

the diet by taking medications in tablet or capsule form rather than liquids, which often have sugar in them.

Since the ketogenic diet changes the way the body makes and uses energy, there can be side effects. These include “keto flu”—nausea, vomiting, and tiredness, because ketones are acids, and the body wants to maintain a neutral pH. Or you may at first experience hypoglycemia—feeling shaky and hungry due to low blood sugar. You can avoid these effects by starting slowly, gradually transitioning over the course of a week or two, and drinking plenty of fluids with electrolytes.

Longer-term side effects may include stomach pains and constipation, because you are changing the amount you eat and the types of fiber you’re getting; elevated lipids and cholesterol because of the fats, although these levels come down after about a month, and the HDL (“good cholesterol”) levels increase; kidney stones, which are more common in kids being treated for epilepsy than in adults, and the solution is to drink more water; and decreased bone health, especially in kids, because of the acidic ketones.

Criteser recommends that anyone attempting a ketogenic diet have assistance from a dietitian and get blood tests done to establish a baseline, then at one month, and finally every three months. You can check blood ketones with a finger stick, like checking glucose for diabetes. This is the most accurate check, giving an exact number. You can also test with a urine or breath test, which are less accurate.

She recommends doing a three- or four-month trial of the diet, because you won’t necessarily see the full effects in less than three months.

Although there are no double-blind studies as yet, there have been pilot studies. One conducted in 2023 studied 26 patients with bipolar disorder, of which 20 completed the study. They undertook six to eight weeks of a modified ketogenic diet and achieved good levels of ketones (1.3 mmol/L). Side effects were mild and manageable. The study showed that ketogenic metabolic therapy was safe, but it was too short to show therapeutic effect.

A 14-day study in France with voluntary adult inpatients exhibiting refractory and persistent mental illness tested the diet with a total of 31 subjects, including 13 with bipolar disorder, 12 with schizoaffective disorder, and 7 with major depression. They were put on a strict ketogenic diet limiting them to no more than 20 grams of carbohydrates per day, 15% to 20% of calories from protein, and 75% to 80% of calories from fats. Three of the 31 were unable to complete the study, but the remaining 28 showed improvements in mood and psychiatric symptoms. All but one lost an average of 10 to 11 pounds of weight.

Criteser recommended the following books: [*Ketogenic Diet Therapies for Epilepsy and Other Conditions*](#) by various authors, [*Brain Energy: A Revolutionary Breakthrough in Understanding Mental Health*](#) by Dr. Christopher Palmer, and [*Change Your Diet, Change Your Mind*](#) by Dr. Georgia Ede. Websites worth looking into include [Metabolic Mind](#) and [The Charlie Foundation](#), which addresses ketogenics and epilepsy.

Q. If you lose fifty pounds of weight, wouldn’t that alone affect your mental health? That is, couldn’t there be a placebo effect to the ketogenic diet?

A. This has not been addressed yet, although there is a positive effect of taking control of your life and feeling better for having lost weight. Still, underweight patients do not see the kinds of changes that the ketogenic diet can achieve.

Q. Has anyone done, say, brain scans to determine the effect of the keto diet on neurotransmitters?

A. We don't know exactly what the mental effect of ketosis is yet. But it's understood that Alzheimer's patients cannot metabolize glucose well, and the ketogenic diet creates an uptick in energy to their brains.

Q. Is the structure of the diet the same across all diagnoses?

A. The components are approximately the same, although people with severe mental illness might need more fats and fewer carbs.