

High-fat ketogenic diet effectively treats persistent childhood seizures

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The high-fat ketogenic diet can dramatically reduce or completely eliminate debilitating seizures in most children with infantile spasms, whose seizures persist despite medication, according to a Johns Hopkins Children's Center study published online April 30 in the journal *Epilepsia*.

Infantile spasms, also called West syndrome, is a stubborn form of [epilepsy](#) that often does not get better with antiseizure drugs. Because poorly controlled infantile spasms may cause [brain damage](#), the Hopkins team's findings suggest the [diet](#) should be started at the earliest sign that medications aren't working.

"Stopping or reducing the number of [seizures](#) can go a long way toward preserving neurological function, and the ketogenic diet should be our immediate next line of defense in children with persistent infantile spasms who don't improve with medication," says senior investigator Eric Kossoff, M.D., a pediatric neurologist and director of the ketogenic diet program at Hopkins Children's.

The ketogenic diet, made up of high-fat foods and few carbohydrates, works by triggering biochemical changes that eliminate seizure-causing short circuits in the brain's signaling system. It has been used successfully in several forms of epilepsy.

A small 2002 study by the same Hopkins team showed the diet worked well in a handful of children with infantile spasms. The new study is the largest analysis thus far showing just how effective the diet can be in children with this condition.

Of the 104 children treated by the Hopkins team, nearly 40 percent, or 38 children, became seizure-free for at least six months after being on the diet for anywhere from just a few days to 20 months. Of the 38, 30 have remained so without a relapse for at least two years.

After three months on the diet, one-third of the children had 90 percent fewer seizures, and after nine months on the diet, nearly half of the children in the study had 90 percent fewer seizures. Nearly two-thirds had half as many seizures after six months on the diet.

Nearly two-thirds of the children experienced improvement in their neurological and cognitive development, and nearly 30 percent were weaned off antiseizure medications after starting the diet.

Most of the children continued taking their medication even after starting the diet, the researchers say, because the two are not mutually exclusive and can often work in synergy.

Researchers also used the diet as first-line therapy in 18 newly diagnosed infants never treated with drugs, 10 of whom became seizure free within two weeks of starting the diet. The finding suggests that, at least in some children, the diet may work well as first-line therapy, but the researchers say they need further and larger studies to help them identify patients for whom the diet is best used before medications. Hopkins Children's neurologists are actively using the ketogenic diet as first-line treatment in children with [infantile spasms](#) with promising results.

Side effects, including constipation, heartburn, diarrhea and temporary spikes in cholesterol levels, occurred in one-third of the [children](#), with six percent of them experiencing diminished growth.

Despite these side effects, a recent study by Kossoff and his team showed that the ketogenic diet is safe long term.

Conflict of interest disclosure: Dr. Kossoff has received grant support from Nutricia Inc., for unrelated research. The terms of these arrangements are being managed by the Johns Hopkins University in accordance with its conflict-of-

interest policies.

More information: Journal Epilepsia
www.epilepsia.com/

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