

forces the body to shift from using glucose as the primary energy source to using fat, and the individual develops a state of ketosis. Ketones can be measured in both the child's urine and blood. The mechanism(s) of action remain unclear. The diet is rigorous. All foods and liquids the child consumes must be carefully weighed and measured. There is a liquid formula available for children who cannot take solid foods. The diet is deficient in vitamins and minerals; therefore, vitamin and mineral supplementation is necessary. Potential adverse side effects include constipation, hypoglycemia while the diet is initiated, dehydration, acidosis, and lethargy. Less common but more serious side effects include urinary tract infections, kidney stones, and insufficient weight gain ([Kossoff, 2013](#)).

The ketogenic diet has been shown to be an effective and tolerable treatment for medically refractory seizures with seizure control comparable to antiepileptic drugs in some children. In a meta-analysis of the ketogenic diet, at least 38% of children had a 50% reduction in seizures for at least a year ([Levy, Cooper, and Giri, 2012](#)).

Vagus Nerve Stimulation

VNS was developed as palliative treatment for patients with seizures not controlled by drugs and who are not candidates for diet or surgical therapy ([Moshé, Perucca, Ryvlin, et al, 2015](#)). It is currently indicated as adjunct therapy in patients 12 years old and older with partial-onset seizures (with or without secondary generalization) who are refractory to antiepileptic drugs ([Elliott, Rodgers, Bassani, et al, 2011](#)). A programmable signal generator is implanted subcutaneously in the chest. Electrodes tunneled underneath the skin deliver electrical impulses to the left vagus nerve (CN X). The device is programmed noninvasively to deliver a precise pattern of stimulation to the left vagus nerve. The patient or caregiver can activate the device using a magnet at the onset of a seizure. No long-term adverse effects have been reported with VNS, but dysphonia, throat or neck pain, and cough can occur during stimulation. Studies show that about one third to one half of patients have a reduction in seizures after 1 year of therapy ([Elliott, Rodgers, Bassani, et al, 2011](#)).