

Quick Seizure Medication/ Nutrition Highlights from Cathy B.

All seizure medications affect: Vitamin D

Likelihood of poor vitamin D status is generally high but often unrecognized. Inadequacy of vitamin D is very injurious, as over 200 tissues have receptors for vitamin D (a key steroid hormone) to tell them what to do.

Seizure medications result in greater turn-over, increasing requirements.

RDA levels (e.g. 400 iu) are often inadequate, and in terms of diet requires 4 cups of fortified milk daily. (One cup has 100 iu.) Multivitamins generally have 400 iu as well.

Best advice: Get a 25-hydroxyvitamin D level at least once to be SURE they are OK.

If they are ok (e.g. at least 30 and 40-50 mg/dl is better), then whatever you are doing is sufficient. However, a generous intake is not dangerous and it is a good idea to be sure that at least the 400 iu to 2000 iu/day is provided, since the goal is to prevent development of deficiency, not to wait until it develops to do anything.

If they are low, decide if a therapeutic dose is needed to get up to speed (e.g. 50,000 iu/wk x 8 wks ... which is close to 7000 iu/day) or just a more generous intake (e.g. add 2,000-5,000 iu/day as one tiny gel cap daily, or a similar amount as several 400 iu gummi vitamin Ds, or tablets or liquid drops.

All seizure medications affect: Biotin

All seizure medications increase requirements for biotin.

Biotin has a role in many biochemical pathways, and it is tiny, cheap, over-the-counter and remarkably safe even at extremely high doses. Be sure to read the label, as some multivitamins provide very little. The amount assumed to be sufficient for healthy people is about 30 mcg/day (0.3 mg,) but that amount does not account for the medication effect.

Best advice: Provide supplemental biotin (e.g. 1 mg) to all.

For patients whose seizure problems are related specifically to the metabolic disorder biotinidase deficiency, the amount recommended is substantially more:

Profound biotinidase deficiency: Starting dose is often **5-10 mg/day**, and the level may need to be maintained at that level. It may be decreased to **2.5 mg/day** with careful biochemical monitoring.

Milder or borderline biotinidase deficiency: Starting dose is often **5-10 mg/day**. It may be decreased to **2.5 mg/week** with careful biochemical monitoring.

Some seizure medications affect: Carnitine

Valproic acid and phenytoin decrease production of carnitine and relative carnitine inadequacy increases risk of **liver toxicity, lethargy, weight gain, hypertriglyceridemia and glucose metabolism problems.**

Inadequate carnitine also impairs the efficacy of the valproic acid, so **break-through seizures** are sometimes seen. Low muscle tone is also seen with carnitine insufficiency, and in the extreme this can compromise **heart and diaphragm function as well as other muscles, and result in cardiomyopathy.**

The usual recommended pediatric dose is 50-100 mg/kg/day up to 3000 mg/day, divided into 3 doses. This is safe. Some people (e.g. very large people or people with other factors compromising their carnitine status) will be found to need more. My carnitine paper has more details. There appears to be considerable variation among individuals, both genetic and age-related, in their normal ability to produce carnitine.

Some seizure medications affect: Riboflavin (vitamin B2)

Phenobarbital can deplete riboflavin (vitamin B2) because the drug increases production of a liver enzyme that destroys it.

The **RDA** (i.e., recommended intake for healthy people) is about 1.3 mg/day.

However, even at very high doses there are **no known toxic effects of riboflavin, and no ULs (Upper Limits of Safety) have been established.** For this reason, for people using this medication it is very reasonable to provide generous supplementation of at least 2-5 times the usual recommended intake. [Expect the patient to have very bright yellow urine because riboflavin is also a yellow pigment. This is not harmful at all.]