



Vitamins & Nutritional Supplements

By Dr. Craig Burrows, Chief Medical Officer, Mammoth Hospital

Did you know that in 2016, retail sales in the U.S. for nutritional supplements and vitamins were in excess of \$35 billion? Did you also know that we get most of what we need by eating right and living healthy? While many people swear by their daily regimen of vitamin D, Vitamin C, Folic acid, Thiamine, Iron, and others, it may be that you are paying for what you are already getting. And as is the case with most things in life, too much of a good thing can sometimes be bad for you.

So exactly what and how much of these things do we need, and where do we get them? Great question! Read on for the answers!

Vitamin D is actually a hormone, and almost all of it comes from the action of sunlight on the skin. This raw form is then converted by the liver and then the kidney into its active form, vitamin D3. Food sources high in vitamin D are fatty fish, beef, liver, egg yolks, dairy products, mushrooms & fortified cereals. Vitamin D is necessary in children to help in the growth and development of strong healthy bones. In older people, vitamin D prevents conditions that lead to softening or weakening of the bones, which can eventually cause curvature of spine, muscle weakness, and even fractures of the spine and hips. Most of us get enough vitamin D from being out in the sun, but for those of us who are vitamin D deficient, the recommended daily allowance (RDA) is generally for 600 international units (IU) per day, and for not more than 4000 IU per day. Too much vitamin D can make you feel sick to your stomach, cause kidney



stones, and even lead to kidney failure.

Vitamin C is required for a number of essential processes within the human body, including absorption of iron, wound healing, and the prevention of scurvy, a condition that can lead to fatigue, skin spotting, and bleeding from the mucous membranes found inside of your mouth and your intestines. And while Vitamin C is found in high concentrations in the cells that make up our immune system, it remains unclear if taking extra doses helps fend off the common cold. Many plants and animals that can make their own vitamin C, but humans cannot. So we have to get it from food sources, like fruits and vegetables. Eating 5 varied servings of fruits and vegetables a day can provide more than 200 mg of vitamin C – more than 200% of your daily needs! It is also available as tablets, and is frequently added to drinks or drink mixes. The RDA is 90mg a day, and for not more than 2,000mg a day. Since vitamin C is water soluble (dissolves in water), the excess that we take in is removed by our kidneys. But

too much vitamin C intake from supplements can lead to indigestion and diarrhea. In patients with iron overload (hemochromatosis) and other rare inherited conditions, too much vitamin C can actually make those conditions worse.

Iron is a mineral rather than a vitamin, but is an essential part of hemoglobin and myoglobin, the proteins that carry oxygen in blood and muscles, respectively. Typically, we get all the iron we need from the food we eat, like egg yolks, liver, red meat, dark poultry meat, salmon, and tuna. It is also available in foods like soybeans, lima beans, almonds, broccoli, and spinach, but is more difficult for the human body to absorb. Iron absorption is improved by combining meats along with beans or leafy greens. And as mentioned, vitamin C helps with iron absorption as well. Low iron levels



can lead to low hemoglobin levels, otherwise known as anemia, which in turn can cause fatigue, shortness of breath, or even a heart attack as a result of not enough delivery of oxygen to the heart muscle! The daily iron requirement depends on who you are. For women of child bearing age, the RDA is 18mg a day and 33mg a day if they are vegetarian, again because the iron in fruits and vegetables is more difficult to absorb. For men and for postmenopausal women, the requirement is about 10mg a day. The most common and cheapest supplement is

Iron Sulfate, which contains 65mg of elemental iron per 325mg tablet. Too much iron can lead to conditions like hemochromatosis, a genetic condition, or secondary iron overload. Untreated, both of these conditions can lead to severe organ damage!

Thiamine, or vitamin B1, is necessary for carbohydrate (sugar) metabolism. The body does not produce this, so we have to get it from our diet. The body does not store thiamine, so we have to take in a constant supply. Fortunately, Thiamine is present in virtually everything that we eat every day, like whole grain foods, meat, fish, poultry, eggs, vegetables, and fruit juices. Thiamine deficiency can lead to disorders with the nervous system, and can also cause a type of heart failure known as beriberi. The RDA for thiamine is about 1mg per day. While there is no real toxic effect of too much thiamine, there is no benefit from taking more than you are already getting from your diet.

Folic acid, or vitamin B6, is another water soluble vitamin that we typically get from our diet. Folic acid is necessary to prevent anemia and birth defects during pregnancy. Like many other vitamins, Folic acid is abundant in many of the foods we eat, like dark leafy green vegetables, fruits, meats, and eggs. The RDA for folic acid is about 1mg per day. Like Thiamine, it is not typically stored, so it has to be taken in daily. And since it dissolves in water, the excess amount that we take in is excreted in the urine.

Since we get nearly all of the vitamins and minerals we need from the foods we eat every day, taking extra is usually not needed, and can in fact be harmful. Before starting on any supplement, talk to your health care provider, or better yet, ask for a referral to Casey Piercey, Mammoth Hospital's dietitian. Many of these levels can be checked by simple labs at Mammoth Hospital, and are very likely to be normal. No child should be taking any supplements without approval by a pediatrician. There are no studies to prove any benefit in children, and sometimes, these can be dangerous. We at Mammoth Hospital are concerned about your health and well-being, so be smart about what you put into your body. How you take care of yourself will add years to your life, and life to your years!