MONROE STREET MEDICAL CLINIC

TRADITIONAL AND NATURAL HEALTH CARE

DAILY VITAMIN SUPPLEMENT

Why take a nutritional supplement?

First, the modern diet, convenient, quick, and tasty as it may be, is **not**, repeat **not** designed to provide optimal nutrition. Surveys of the American population indicate that few people obtain the recommended daily allowance for each nutrient. Most of this is due to poor food choices, with processed or packaged food being favored over natural food. Just take a look at the relatively small amount of space given over to fresh fruits and vegetables in the average supermarket compared to the aisles and aisles of frozen, packaged and otherwise processed food.

One study published in the Journal of Applied Nutrition in 1993 (vol 45 page 35) found that food raised in most commercial operations has about half the trace minerals compared to organic or naturally grown food.

The second reason to take a nutritional supplement is that most of us desire to maintain our health for a longer period of time. We live in a world with increased psychological and physiological stress. For example, our bodies require an increased supply of the anti-oxidant vitamins to detoxify the many chemicals that we breathe or ingest everyday. The anti-oxidant vitamins are vitamins C, E, beta-carotene and minerals such as selenium. Bioflavonoids also have an anti-oxidant effect and protect against several diseases of aging.

The third reason to take a nutritional supplement is that many common illnesses such as heart disease, cancer, blindness and the mental decline of aging are less common in well nourished people. All these illnesses have a nutritional component. They strike those people with a poor diet much sooner than they do people who eat fresh healthful food and have an adequate supply of nutrient vitamins and minerals.

Food, or a supplement?

Researchers have found that the calcium in milk is more effective in strengthening bone than is a calcium supplement. Other nutrients, such as folic acid, appear to be more effective when taken as a supplement than when consumed in food. Vitamins E and C can be taken in higher and more effective doses when taken as a supplement. So both foods and supplements have their advantages. Of the two, the most important factor is --- fresh food, healthfully prepared.

What about the recommended daily dietary allowance?

The RDA or Recommended Daily Dietary Allowance gives the minimum amount of various nutrients required to prevent the commonly recognized deficiency diseases. These amounts are meant to apply to populations and not to individuals. The groups who draw up the RDAs recognize well that there are many individuals who need more than the minimum amount.

The RDAs are generally based on short term research. The increase of nutritional needs with disease are not considered. The increase of nutritional need due to lifestyle such as smoking or alcohol use is not considered. The variation in need due to environmental toxins is not considered.

Suggested optimal nutrient allowance

Doctors Cheraskin and Ringsdorf at the University of Alabama School of Medicine researched the effect of diet on health. They studied 13,500 people in six areas of the United States for a period of fifteen years. They measured the health of these people using comprehensive tests and carefully recorded their nutrient intake.

They looked at the healthiest individuals in this group of 13,500 people and determined the amount of each nutrient taken in by these people. In this way they determined the optimal amount of each nutrient needed not just to prevent vitamin deficiency disease but to promote the greatest degree of health.

They reported that the healthiest individuals were those who took vitamin supplements and had also eaten a diet that was nutrient dense. An example of nutrient dense foods are whole grains, fresh vegetables and fruits, nuts (except peanuts), and small amounts of dairy, fish, poultry, and beef. A nutrient rich diet is one in which the foods eaten are rich in nutrients compared to the amount of calories. An example of a nutrient poor diet would be packaged cereal for breakfast, a “fast food” lunch and a pizza for supper. Such a diet is high in fats and calories, low in magnesium, bioflavonoids, carotenoids, minerals and vitamins.

The suggested optimal nutritional allowance is given on the table on the accompanying page. As you can see these are listed by age group. Most of the data is from the research by doctors Cheraskin and Ringsdorf. In a few cases the amounts are taken from other sources.

Who should consume the Suggested Optimal Nutritional Allowance?

There is reasonable scientific evidence to indicate that the allowances given provide benefit to those under constant emotional stress and who are exposed to environmental toxins such as polluted air, who wish to enhance their immunity, who wish to reduce their risk of cancer, cardiovascular disease, osteoporosis, and eye disease. These allowances are especially necessary to people who smoke or who are exposed to second hand smoke, who drink alcohol, take birth control pills, or are pregnant. They are especially applicable to people over the age of fifty.

Question: Why do vitamins make my urine look yellow?

Answer: 'Riboflavin' contains a flavin molecule, which is yellow. The Latin word "flavin" means 'yellow'.

Warning!

If you have a choice of a healthy, nutrient rich diet and no supplement or an "empty calories" diet and the supplements listed below, choose a healthy diet. We are always learning more about the value of the nutrients in our food and one thing is that a *variety* of nutrients is always preferable. For instance, Vitamin E comes in various forms and we do better to take a mixture of the forms found in nature rather than a simple concentrate of the most powerful form of Vitamin E. The same is true of beta-carotene. If your finances are limited and your choice is buying vitamins or buying fresh fruits and vegetables, please choose the fruits and vegetables. Every month or two we learn of new substances in these fruits and vegetables that are beneficial to our health and that are not found yet in a vitamin pill.

Explanation of table of Suggested Optimal Nutritional Allowances

The left column lists each nutrient, the second the units in which the nutrient is measured. Mg is an abbreviation for milligrams, mcg an abbreviation for microgram. A microgram is one one-thousandth of a milligram. The next three columns of the table are labeled Usual Diet and give the minimum, average and maximum amounts for each nutrient in the diet. I consulted several sources to give you this information; as you can see, information is not available for every nutrient.

Next, the suggested optimal nutritional allowance is listed for males and females in ten different age groups. With this information you can calculate your own need for each nutrient. If you don't feel your diet is rich in nutrients, you might assume your intake of, say, boron is at the lower end of the scale, which is 1.7 milligrams per day in the chart. Assume you are a 22 year old female, so your total requirement is 2.5 milligrams. The difference is 0.8 milligram, so you would either want to consume a more healthful diet, or take a supplement containing at least 0.8 milligrams of boron.

Question: When I take vitamins, I know a lot of them wind up in my urine. For one thing, I can see the yellow from the riboflavin! Does that mean it is a waste of time to take vitamins?

Answer: When you drink water, a lot of it winds up in your urine. There are good reasons to be sure we have plenty of both water and the micronutrients.

We have done the math for those of you over 25 years old on the second page of the table. Again, for boron, since a woman over 25 has a slightly higher need for boron, her maximum need would be 1.3 milligrams. If we want to assume she getting closer to the maximum boron intake of 7 milligrams per day from diet, then she is getting enough boron and needs no boron is her supplement.

Finally, we list the nutrient amounts of some multivitamin supplements that we know to be of good quality. We lists the cost of each supplement at the bottom of the chart. With this you can determine which combination of supplements is the least expensive way to meet your estimated needs.

Notes on individual nutrients

Niacinamide can be made from niacin and vice-versa so no separate allowance was determined for niacinamide. Choline is important for development and maintenance of the brain. And although no optimal allowance was given by Dr. Cheraskin and his partner, there is some evidence that adequate choline is important for brain development in the period of infancy and for maintenance of brain function in the elderly.

Because Vitamin A is can be listed on your vitamin bottle in two different ways, it is listed twice. The top row gives Vitamin A requirements in micrograms Retinol equivalents, the second line in international units. You should use whichever line lists the requirements in the units expressed on your bottle. Although beta-carotene can be transformed into vitamin A by the body, the opposite is not true. We require beta-carotene in our diet.

		Usual diet			**Daily requirement including dietary intake**											
	Units	average			Male (by age)						Female (by age)					
Age=>		min		max	11-14	15 18	19 24	25 50	51+		11 14	15 18	19 24	25 50	51+	
Boron	mg	1.7		7	1.5	2	2.5	2.5	2.5		1.5	2	2.5	3	3	
Calcium	mg	400		1300	1000		700		1200			800				
Chromium	mcg	8	25	90	200		300		200			300				
Copper	mg	0.50	1.20	2	1.5 to 4											
Iodine	mcg	50	173		150											
Iron	mg	6.00		30	15				20				22		20	
Magnesium	mg	132	270	595	300		500		600		300	400	450		550	
Manganese	mg	2			5				10			5			10	
Molybdenum	mcg	80		350	300											
Potassium	mg	2000		4000	2000		3000		2000			3000				
Selenium	mcg	60		100	60	70	100	175	250		165	70	90	150	200	
Vanadium	mcg	10		30	unknown											
Zinc	mg	9	10		15	18	20		12		15	17				
Vitamin A	mcg RE		620		1000		2000		800			2000				
Vitamin A	IU	3000	5400		3333		6667		2667			6667				
		1000 mcg RE is equal to 3333 IU; use whichever of the above rows applies														
betacarotene	mg RE				3	4	6		3		4	5				
betacarotene	units				5000	7000	10000		5000		7000	8000				
		3 mg RE is equal to 5000 units; use whichever of the above rows applies														
B1(thiamine)	mg				3.3	3.5	3.5	7.5	9.2		3.1	3.1	3.1	7.1	9	
B2(riboflavin)	mg				2	2.2	2.5	2.5	2.5		1.8	1.8	2			
B3(niacin)	mg				25		30						25			
niacinamide	mg															
B6(pyridoxine)	mg				2	5	10		25		2	5	10		20	
B12(cobalamin)	mcg					2			3			2			3	
folate	mcg	20	240	500		750	1000	2000	5000		500		5000			
folate	mg	0.02	0.24	0.5	0	0.75	1	2	5		0.5		5			
1 milligram (mg) is equal to 1000 micrograms (mcg); use whichever of the above rows applies																
Vitamin C	mg	9		400	150	200		1000	2000		150	200		1000	2000	
Vitamin D	mcg		2.4		20		40	50	100		20		50		100	
Vitamin D	IU		96		800		1600	2000	4000		800		2000		4000	
100 mcg cholecalciferols is equal to 4000 units; use whichever of the above rows applies																
Vitamin E	units				70	100	400		800		70	90	400		800	
Vitamin K	mcg	300		500	45	65	70	80			45	55	60	65		
biotin	mcg	50		200	75	100	200				75	100	200			
choline	mg	600		1000												
pantothenate	mg		4		5		8		10		5	7	10			

As you can see from the chart the minimum intake of Vitamin K is about 300 micrograms a day and the maximum need is no more than 80 micrograms a day. Insofar as the suggested optimal nutritional allowances were worked out during the 1960s and 70s using the information available at the time, it's evident that most

of us don't need any extra Vitamin K. There is some recent evidence that Vitamin K may be more important for the strength of the bones than we had previously thought. Osteoporosis is a problem that we're taking more seriously now and treating more effectively than we were in the 1960s. Some supplement manufacturers put Vitamin K in their supplement for this reason.

Use this chart to calculate your daily supplemental requirements.

Supplemental Need

		Age 25 - 50				Over age 50			
		male		female		male		female	
	Units	max	min	max	min	max	min	max	min
Boron	mg	1	0	1	0	1	0	1	0
Calcium	mg	300	0	400	0	300	0	0	0
Chromium	mcg	292	210	292	210	292	210	292	210
Copper	mg	4	0	4	0	4	0	4	0
Iodine	mcg	100	0	100	0	100	0	100	0
Iron	mg	14	0	16	0	14	0	14	0
Magnesium	mg	368	0	318	0	468	5	418	0
Manganese	mg	3	5	3	5	8	10	8	10
Molybdenum	mcg	220							
Potassium	mg	1000							
Selenium	mcg	115	75	90	50	190	150	140	100
Vanadium	mcg				unknown				
Zinc	mg	11	10	8	7	11	10	8	7
Vitamin A	mcg RE	1381	1381	1381	1381	1382	1382	1382	1382
Vitamin A	IU	3670	1270	3670	1270	3673	1273	3673	1273
	1000 mcg RE is equal to 3333 IU; use whichever of the above rows applies								
betacarotene	mg RE	6	6	5	5	6	6	5	5
betacarotene	units	10000	10000	8000	8000	10000	10000	8000	8000
	3 mg RE is equal to 5000 units; use whichever of the above rows applies								
B1(thiamine)	mg	8		7		9		9	
B2(riboflavin)	mg	3		2		3		2	
B3(niacin)	mg	30	30	25	25	30	30	25	25
niacinamide	mg	niacinamide helps meet the niacin requirement							
B6(pyridoxine)	mg	10	10	10	10	25	25	20	20
B12(cobalamin)	mcg	2				3			
folate	mcg	1980	1500	4980		4980	4500	4980	
folate	mg	2	2	5		5	5	5	
1 milligram (mg) is equal to 1000 micrograms (mcg); use whichever of the above rows applies									
Vitamin C	mg	991	600	991	600	1991	1600	1991	1600
Vitamin D	mcg	48		48		98			
Vitamin D	IU	1904		1904		3904			
	100 mcg cholecalciferols is equal to 4000 units; use whichever of the above rows applies								
Vitamin E	units	400	400	400	400	800	800	800	800
Vitamin K	mcg	0	0	0	0	0	0	0	0
biotin	mcg	150							
choline	mg	0							
pantothenate	mg	4	4	6	6	6	6	6	6

If you look at the minerals such as copper, iodine, and iron you'll see that for men over the age of fifty, those men who consume the largest amount are getting more than they need and so there's no need for supplementation. This is true for several nutrients and so in the "minimum" column for that nutrient you'll find a zero. This means that the daily diet is adequate for those consuming the most nutrient rich diet.

Active forms of vitamins

Riboflavin or vitamin B2 is not active by itself. The body transforms it to riboflavin-5-phosphate in order to

make use of it. Pyridoxine or vitamin B6 has to be made into pyridoxine-5 –phosphate (P5P) for it to do you any good. One milligram of pyridoxal 5 phosphate is equivalent to about 10 milligrams of pyridoxine. Vitamin B12 is often supplied as cyanocobalamin, which must be transformed to the active forms adenosylcobalamin and methylcobalamin. Because some people are metabolically unable to make these transformations, some manufacturers will include these more active forms of the vitamin. This is more expensive.

When multiple vitamins go wrong

Some multiple vitamins will speckle as they age. Iron can combine with Vitamin C in the capsule and cause black spots in the tablet. This is a sign of poor manufacturing practice. The better companies will 'microcoat' the minerals to prevent this. Also vitamin B12 can interact with thiamine, Vitamin C and copper in the tablet. This can change thiamine into an inactive form which can inhibit the Vitamin B12 already in your body(*Journal of Clinical Investigation* 1982;70:889). Although the nutraceutical manufacturers at our office all follow "good manufacturing principles", there's no government requirement that companies follow such practices. Many companies don't and it enables them to put out vitamins at a very competitive price.

Notes about additives

Magnesium stearate is added to many supplements and doesn't need to be listed on the label as it's "generally recognized as safe" by the Food and Drug Administration. It may reduce bio-availability by increasing the time required for the tablet to dissolve.

You will find that the labels of the better manufacturers may list more additives than the label of the cut-rate manufacturer. This is because it is better practice to list everything on the label, even if the government doesn't require it. The less ethical manufacturer makes the label look as good as possible by leaving off anything they are not required to list.

Some tablets are covered with shellac so that the tablets don't stick together in the bottle. This prevents the tablet from dissolving in your stomach. We don't carry such products.

Notes on individual nutrients

Most minerals are better absorbed as an amino acid chelate. Most of those marketed and labeled as amino acid chelates are not true chelates. A mineral that contains true amino acid chelates will list the name of the amino acid to which the mineral is attached. Albion Laboratories in Utah produces patented mineral chelates which are maximally bio-available. These are the mineral chelates used in Amni Basic Preventive. Thorne Research manufactures its own amino acid chelates, unlike many companies which buy ingredients from the lowest bidder and put them into a tablet without regard for bioavailability.

The fat soluble nutrients are Vitamin A, beta-carotene, Vitamin D, Vitamin E and Vitamin K. These are best taken with other fats to enhance their assimilation. Taking them with a meal is a good way to do this. If you aren't absorbing fats, you aren't going to absorb the vitamins just mentioned. If there's any question about your ability to absorb fats you should get these vitamins in water soluble form.

Calcium is absorbed best if taken in individual doses of 500 milligrams or less, and better absorbed from dairy products and other foods than it is from a supplement. There is evidence that calcium is best absorbed in the evening.

Beta-carotene and vitamin A

A carrot, whether cooked or raw, contains about 10,000 units of beta-carotene. Raw spinach (3 and a half ounces) contains about 8,000 units, 7000 if it is cooked. Two-fifths of a cup of canned pumpkin will give you 34,000 units, a cup of baked squash 13,000 units, a large sweet potato 14,600 units, a small one 8000 units. There's some evidence that natural beta-carotene is more effective than synthetic "all-trans" beta-carotene.

Beta-carotene is a molecule about twice as big as Vitamin A. Any animal can chop beta-carotene in half in the middle and turn it into two molecules of Vitamin A, so you get vitamin A only from animal foods. No matter how much beta-carotene you take, your body will make no more Vitamin A than you need, so you can't overdose on beta-carotene. All you can do is temporarily turn your skin yellowish-orange. The situation is different with vitamin A, which is dangerous in large doses. Vitamin A and beta-carotene, as you can see, have some similarities and differences.

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