	PATIENT FIRST NAME :	
	PATIENT SURNAME:	
	DATE OF BIRTH:	GENDER:
	ADDRESS:	

LAB TESTS DIRECT-PATIENT REPORT

Result Range Units

Results Overview

Normal	Borderline	High Need	Supplementation for High Need
Antioxidants			
Vitamin A / Carotenoids			
Vitamin C			
Vitamin E / Tocopherols			
B-Vitamins			
Thiamin - B1			
Riboflavin - B2			
Niacin - B3			
Pyridoxine - B6			
Folic Acid - B9			
Cobalamin - B12			
Minerals			
Magnesium			
Manganese			
	Zinc		
		Molybdenum	Molybdenum - Dose = 75 mcg

SUGGESTED SUPPLEMENT SCHEDULE

Supplements	Daily Recommended Intake (DRI)	Patient's Daily Recommendations	Provider Daily Recommendations
Antioxidants			
Vitamin A / Carotenoids	1,333 IU	1,500 IU	
Vitamin C	25 mg	50 mg	
Vitamin E / Tocopherols	10 IU	50 IU	
B-Vitamins			
Thiamin - B1	0.6 mg	2 mg	
Riboflavin - B2	0.6 mg	2 mg	
Niacin - B3	8 mg	10 mg	
Pyridoxine - B6	0.6 mg	2 mg	
Folic Acid - B9	200 mcg	200 mcg	
Cobalamin - B12	1.2 mcg	10 mcg	
Minerals			
Magnesium	130 mg	150 mg	
Manganese	1.5 mg	2 mg	
Molybdenum	22 mcg	75 mcg	
Zinc	5 mg	10 mg	
Digestive Support			
Pancreatic Enzymes		0 IU	
Amino Acid		Amino Acid	
	mg/day		mg/day
Arginine	48	Methionine	0
Asparagine	45	Phenylalanine	9
Cysteine	0	Serine	0
Glutamine	0	Taurine	0
Glycine	159	Threonine	11
Histidine	59	Tryptophan	0
Isoleucine	9	Tyrosine	28
Leucine	0	Valine	0
Lysine	298		

Recommendations for age and gender-specific supplementation are set by comparing levels of nutrient functional need to optimal levels as described in the peer-reviewed literature. They are provided as guidance for short-term support of nutritional deficiencies only.

The Suggested Supplemental Schedule is provided at the request of the ordering practitioner. Any application of it as a therapeutic intervention is to be determined by the ordering practitioner.

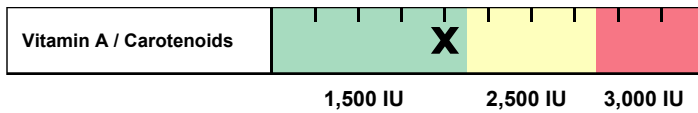
Key

	Normal
	Borderline
	High Need

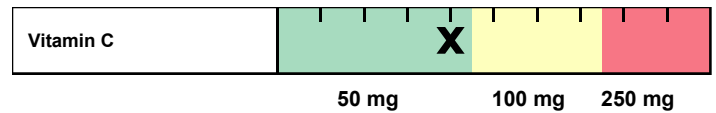
Amino Acids FMV Interpretation At-A-Glance

Nutritional Needs

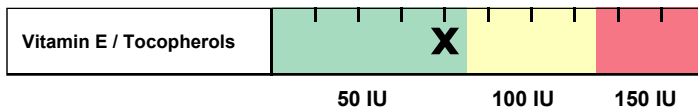
Antioxidants



- ▶ Beta-carotene & other carotenoids are converted to vitamin A (retinol), involved in vision, antioxidant & immune function, gene expression & cell growth.
- ▶ Vitamin A deficiency may occur with chronic alcoholism, zinc deficiency, hypothyroidism, or oral contraceptives containing estrogen & progestin.
- ▶ Deficiency may result in night blindness, impaired immunity, healing & tissue regeneration, increased risk of infection, leukoplakia or keratosis.
- ▶ Food sources include cod liver oil, fortified cereals & milk, eggs, sweet potato, pumpkin, carrot, cantaloupe, mango, spinach, broccoli, kale & butternut squash.



- ▶ Vitamin C is an antioxidant (also used in the regeneration of other antioxidants). It is involved in cholesterol metabolism, the production & function of WBCs and antibodies, and the synthesis of collagen, norepinephrine and carnitine.
- ▶ Deficiency may occur with oral contraceptives, aspirin, diuretics or NSAIDs.
- ▶ Deficiency can result in scurvy, swollen gingiva, periodontal destruction, loose teeth, sore mouth, soft tissue ulcerations, or increased risk of infection.
- ▶ Food sources include oranges, grapefruit, strawberries, tomato, sweet red pepper, broccoli and potato.



- ▶ Alpha-tocopherol (body's main form of vitamin E) functions as an antioxidant, regulates cell signaling, influences immune function and inhibits coagulation.
- ▶ Deficiency may occur with malabsorption, cholestyramine, colestipol, isoniazid, orlistat, olestra and certain anti-convulsants (e.g., phenobarbital, phenytoin).
- ▶ Deficiency may result in peripheral neuropathy, ataxia, muscle weakness, retinopathy, and increased risk of CVD, prostate cancer and cataracts.
- ▶ Food sources include oils (olive, soy, corn, canola, safflower, sunflower), eggs, nuts, seeds, spinach, carrots, avocado, dark leafy greens and wheat germ.

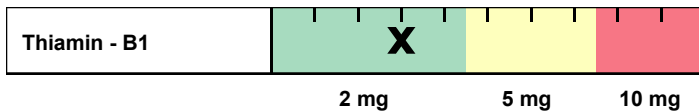
Key

▶	Function
▶	Causes of Deficiency
▶	Complications of Deficiency
▶	Food Sources

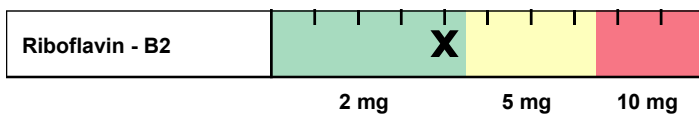
Amino Acids FMV Interpretation At-A-Glance

Nutritional Needs

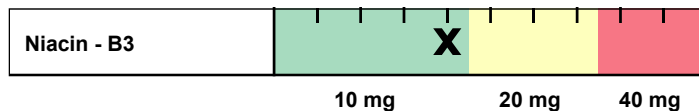
B-Vitamins



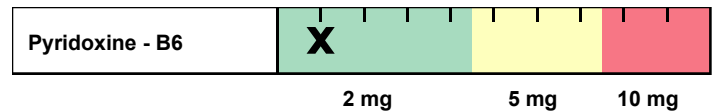
- ▶ B1 is a required cofactor for enzymes involved in energy production from food, and for the synthesis of ATP, GTP, DNA, RNA and NADPH.
- ▶ Low B1 can result from chronic alcoholism, diuretics, digoxin, oral contraceptives and HRT, or large amounts of tea & coffee (contain anti-B1 factors).
- ▶ B1 deficiency may lead to dry beriberi (e.g., neuropathy, muscle weakness), wet beriberi (e.g., cardiac problems, edema), encephalopathy or dementia.
- ▶ Food sources include lentils, whole grains, wheat germ, Brazil nuts, peas, organ meats, brewer's yeast, blackstrap molasses, spinach, milk & eggs.



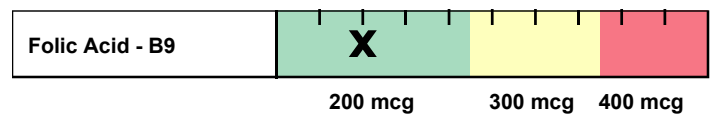
- ▶ B2 is a key component of enzymes involved in antioxidant function, energy production, detoxification, methionine metabolism and vitamin activation.
- ▶ Low B2 may result from chronic alcoholism, some anti-psychotic medications, oral contraceptives, tricyclic antidepressants, quinacrine or adriamycin.
- ▶ B2 deficiency may result in oxidative stress, mitochondrial dysfunction, low uric acid, low B3 or B6, high homocysteine, anemia or oral & throat inflammation.
- ▶ Food sources include milk, cheese, eggs, whole grains, beef, chicken, wheat germ, fish, broccoli, asparagus, spinach, mushrooms and almonds.



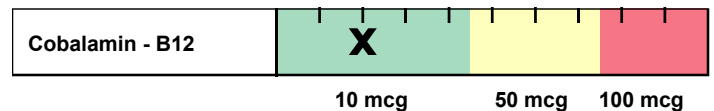
- ▶ B3 is used to form NAD and NADP, involved in energy production from food, fatty acid & cholesterol synthesis, cell signaling, DNA repair & cell differentiation.
- ▶ Low B3 may result from deficiencies of tryptophan (B3 precursor), B6, B2 or Fe (cofactors in B3 production), or from long-term isoniazid or oral contraceptive use.
- ▶ B3 deficiency may result in pellagra (dermatitis, diarrhea, dementia), neurologic symptoms (e.g., depression, memory loss), bright red tongue or fatigue.
- ▶ Food sources include poultry, beef, organ meats, fish, whole grains, peanuts, seeds, lentils, brewer's yeast and lima beans.



- ▶ B6 (as P5P) is a cofactor for enzymes involved in glycogenolysis & gluconeogenesis, and synthesis of neurotransmitters, heme, B3, RBCs and nucleic acids.
- ▶ Low B6 may result from chronic alcoholism, long-term diuretics, estrogens (oral contraceptives and HRT), anti-TB meds, penicillamine, L-DOPA or digoxin.
- ▶ B6 deficiency may result in neurologic symptoms (e.g., irritability, depression, seizures), oral inflammation, impaired immunity or increased homocysteine.
- ▶ Food sources include poultry, beef, beef liver, fish, whole grains, wheat germ, soybean, lentils, nuts & seeds, potato, spinach and carrots.



- ▶ Folic acid plays a key role in coenzymes involved in DNA and SAMe synthesis, methylation, nucleic acids & amino acid metabolism and RBC production.
- ▶ Low folate may result from alcoholism, high-dose NSAIDs, diabetic meds, H2 blockers, some diuretics and anti-convulsants, SSRIs, methotrexate, trimethoprim, pyrimethamine, triamterene, sulfasalazine or cholestyramine.
- ▶ Folate deficiency can result in anemia, fatigue, low methionine, increased homocysteine, impaired immunity, heart disease, birth defects and CA risk.
- ▶ Food sources include fortified grains, green vegetables, beans & legumes.



- ▶ B12 plays important roles in energy production from fats & proteins, methylation, synthesis of hemoglobin & RBCs, and maintenance of nerve cells, DNA & RNA.
- ▶ Low B12 may result from alcoholism, malabsorption, hypochlorhydria (e.g., from atrophic gastritis, H. pylori infection, pernicious anemia, H2 blockers, PPIs), vegan diets, diabetic meds, cholestyramine, chloramphenicol, neomycin or colchicine.
- ▶ B12 deficiency can lead to anemia, fatigue, neurologic symptoms (e.g., paresthesias, memory loss, depression, dementia), methylation defects or chromosome breaks.
- ▶ Food sources include shellfish, red meat poultry, fish, eggs, milk and cheese.

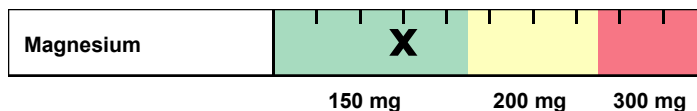
Amino Acids FMV Interpretation At-A-Glance

Nutritional Needs

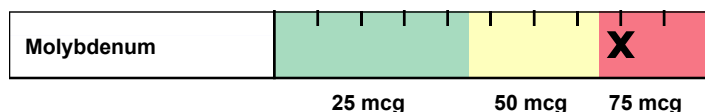
Minerals



- ▶ Manganese plays an important role in antioxidant function, gluconeogenesis, the urea cycle, cartilage & bone formation, energy production and digestion.
- ▶ Impaired absorption of Mn may occur with excess intake of Fe, Ca, Cu, folic acid, or phosphorous compounds, or use of long-term TPN, Mg-containing antacids or laxatives.
- ▶ Deficiency may result in impaired bone/connective tissue growth, glucose & lipid dysregulation, infertility, oxidative stress, inflammation or hyperammonemia.
- ▶ Food sources include whole grains, legumes, dried fruits, nuts, dark green leafy vegetables, liver, kidney and tea.



- ▶ Magnesium is involved in >300 metabolic reactions. Key areas include energy production, bone & ATP formation, muscle & nerve conduction and cell signaling.
- ▶ Deficiency may occur with malabsorption, alcoholism, hyperparathyroidism, renal disorders (wasting), diabetes, diuretics, digoxin or high doses of zinc.
- ▶ Low Mg may result in muscle weakness/spasm, constipation, depression, hypertension, arrhythmias, hypocalcemia, hypokalemia or personality changes.
- ▶ Food sources include dark leafy greens, oatmeal, buckwheat, unpolished grains, chocolate, milk, nuts & seeds, lima beans and molasses.

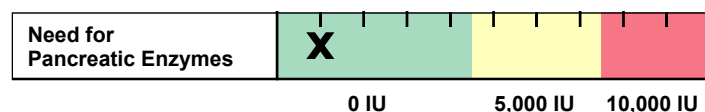


- ▶ Molybdenum is a cofactor for enzymes that convert sulfites to sulfate, and nucleotides to uric acid, and that help metabolize aldehydes & other toxins.
- ▶ Low Mo levels may result from long-term TPN that does not include Mo.
- ▶ Mo deficiency may result in increased sulfite, decreased plasma uric acid (and antioxidant function), deficient sulfate, impaired sulfation (detoxification), neurologic disorders or brain damage (if severe deficiency).
- ▶ Food sources include buckwheat, beans, grains, nuts, beans, lentils, meats and vegetables (although Mo content of plants depends on soil content).



- ▶ Zinc plays a vital role in immunity, protein metabolism, heme synthesis, growth & development, reproduction, digestion and antioxidant function.
- ▶ Low levels may occur with malabsorption, alcoholism, chronic diarrhea, diabetes, excess Cu or Fe, diuretics, ACE inhibitors, H2 blockers or digoxin.
- ▶ Deficiency can result in hair loss and skin rashes, also impairments in growth & healing, immunity, sexual function, taste & smell and digestion.
- ▶ Food sources include oysters, organ meats, soybean, wheat germ, seeds, nuts, red meat, chicken, herring, milk, yeast, leafy and root vegetables.

Digestive Support



- ▶ Pancreatic enzymes are secreted by the exocrine glands of the pancreas and include protease/peptidase, lipase and amylase.
- ▶ Pancreatic exocrine insufficiency may be primary or secondary in nature. Any indication of insufficiency warrants further evaluation for underlying cause (i.e., celiac disease, small intestine villous atrophy, small bowel bacterial overgrowth).
- ▶ A high functional need for digestive enzymes suggests that there is an impairment related to digestive capacity.
- ▶ Determining the strength of the pancreatic enzyme support depends on the degree of functional impairment. Supplement potency is based on the lipase units present in both prescriptive and non-prescriptive agents.

All biomarkers reported in micromol/gm creatinine unless otherwise noted.

Amino Acids (FMV)

Nutritionally Essential Amino Acids		
Amino Acid	Reference Range	
Arginine	35-159	31
Histidine	491-3,392	531
Isoleucine	48-150	59
Leucine	65-191	89
Lysine	149-1,522	63
Methionine	59-167	148
Phenylalanine	69-188	85
Taurine	274-1,607	3,744
Threonine	132-639	204
Tryptophan	72-308	125
Valine	44-147	73

Nonessential Protein Amino Acids		
Amino Acid	Reference Range	
Alanine	181-878	318
Asparagine	100-508	99
Aspartic Acid	112-186	70
Cysteine	50-376	156
Cystine	50-126	31
γ-Aminobutyric Acid	<= 109	13
Glutamic Acid	7-74	42
Glutamine	308-1,210	807
Proline	6-35	11
Tyrosine	72-333	96

Creatinine Concentration		
	Reference Range	
Creatinine ♦	3.1-19.5 mmol/L	5.6

Intermediary Metabolites		
B Vitamin Markers	Reference Range	
α-Aminoadipic Acid	23-180	92
α-Amino-N-butyric Acid	24-108	30
β-Aminoisobutyric Acid	28-550	103
Cystathionine	13-71	6
3-Methylhistidine	107-554	232

Urea Cycle Markers		
	Reference Range	
Ammonia	25.0-88.0 mmol/g creatinine	20.9
Citrulline	28-117	35
Ornithine	6-56	12
Urea ♦	223-918 mmol/g creatinine	681

Glycine/Serine Metabolites		
	Reference Range	
Glycine	1,058-4,772	1,142
Serine	306-1,093	671
Ethanolamine	262-945	688
Phosphoethanolamine	45-197	124
Phosphoserine	51-145	113
Sarcosine	<= 183	71

Dietary Peptide Related Markers		
	Reference Range	
Anserine (dipeptide)	23-483	3
Carnosine (dipeptide)	39-432	111
1-Methylhistidine	144-2,122	171
β-Alanine	<= 46	13

Markers for Urine Representativeness		
	Reference Range	
Glutamine/Glutamate	>= 7	19
Ammonia	25.0-88.0 mmol/g creatinine	20.9
Arginine/Ornithine	>= 1.1	2.6

Urine Representativeness Index	Ref Range 5	10
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