

Vitamin A				
Type	Fat Soluable	Names: Retinol, Rentinal, Retinoic Acid		
RDA	5-15 mg (eyes)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*keratin based (hair, nails, skin) so = *break, bend nails *brittle breaking hair *rough skin	*Yellow skin *weak cells *abnormalities of skin *hair loss *yellowing of skin *cracking of lips	Fruit: red & orange mango apricot apple prune	Beta Caroteen = precursor Vit A
Sensory	*night blindness *flash of light with very slow recovery to normal vision *not see in the dark *childhood blindness *ear infections *dry eye	*blurry vision *bloody nose		Beta Caroteen = can be converted to Vit A in fatty tissue
Nervous		*headaches *insomnia *injure nervous system or brain	Vegetable: red & orange Dk Leafy Greens Yellow Veggies Carrots Corn Flakes Spinach Broccoili Sweet Potato Tomato Juice Butternut Squash Turnip Greens Avocado	Protein status affects Vit A transport
Digestive	*keratinization - goblet cells in intestines = ↓ mucus = remove less nutrients from food = malnutrition = weak muscles & weak immunity *GI infection *weakened teeth/ cavities	*low appetite *vomiting *anorexia *weight loss *diarrhea		Healthy Liver affects Vit A availability
Respiratory				Zinc is needed to transport

Vitamin A				
Type	Fat Soluable	Names: Retinol, Rentinal, Retinoic Acid		
RDA	5-15 mg (eyes)			
System	Deficiency	Overdose	Sources	Interactions
Skeletal	*slow bone growth *slow break repair	*abnormalities of bone *fracture of bone *bone & joint pain	Dairy: mozz cheese milk eggs	Zinc needed to convert retinol to retinal
Circulatory		*high free calcium *high fat in blood *amemia		Zinc deficiency supresses RBP
Immune	*measles *pneumonia *severe diarreha *weak	*fever	Meats: Liver Salmon	Zinc needed for enzyme called retinol dehydrogenase to function
Endocrine				beta-carotene needed to allow Vit A to function & can be converted into Vit A if needed
Muscular	*weak		Grains: Pumpnickel Bread	
Reproductive	*vaginal infections *low sperme count	*birth defects (detectable as early as 7 weeks) *irregular cycle		
Renal	*UTI's		Fats: Butter	
Diseases				
Other		*dry mucus membranes	Other:	
Special Dosages	*must consume Vit A with some fat in order for it to be synthesized			

Vitamin A				
Type	Fat Soluable	Names: Retinol, Rentinal, Retinoic Acid		
RDA	5-15 mg (eyes)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>3 Types Vit A (all after active inside cells called Retinoids)</p> <ol style="list-style-type: none"> 1) Retinol (from retinyl from animals) 2) Rentinal 3) Retinoic Acid <p>*RBP = Retinol Binding Protein (made in liver), picks up vit A from liver, carries to cells through blood stream, they have special very fragile, easily killed cell receptors</p> <p>*Too much Vit A w/out enough RBP's to pick up will damage all cells and affect every body system</p> <p>*Carotinoids = Vit A from plants, less efficiently absorbed and converted than retinoids</p> <p>3 Roles of Vit A</p> <ol style="list-style-type: none"> 1) <i>Promote Vision</i> <ul style="list-style-type: none"> *clear corneal vision *night vision *convert's light energy to nerve impulse @ retina 2) <i>Protein Synthesis & Cellular Differentiation</i> <ul style="list-style-type: none"> *Most vit A is stored in cell membranes *1,000th of all Vit A is stored in Retina *90% stored in Liver *Keeps epithelial tissues & skin healthy *Promotes epithelial and goblet cells *rebuilds collagen & elastin 3) <i>Growth & Reproduction</i> <ul style="list-style-type: none"> *Sperm development *Normal fetal development in vitro *Promotes healthier growth & height in children *Disassembles and reassembles 4 bone growth & strength <p>Childhood Blindness</p> <p>Insufficient Vit A in the front of the Cornea This = Xerophthalmia and happens in stages</p> <ol style="list-style-type: none"> 1) Cornea = dry & hard = xerosis 2) Cornea Softens = irreversible blindness = keratomalacia <p>Other Functions/Info</p> <ul style="list-style-type: none"> *needed to create sperm *converts light energy to nerve impulses *helps with normal growth & development in children *90% of Vit A is stored in LIVER where is transports proteins 			

Vitamin B1				
Type	Water Sol	Names: Thiamine, Thymine Pyrophosphate		
RDA	1.1-1.5 mg/pd (skinny)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*hair falls out (b/c poor circulation)		Fruit:	Need for B1 is higher if diet is high carb
Sensory	*macular degeneration			If B1 low, prob all B vits low
Nervous	*depression *confusion *nerve damage *apathy	*balance problems *insomnia	Vegetable: lima beans peas lentils	Dextrose reduces
Digestive	*low appetite *chronic *constipation *anorexia *vomiting *poor liver function	*intestinal trouble		Aluminum causes hypersensitivity to B1
Respiratory				Suphite foods reduce
Skeletal		*lethargy	Dairy: egg yolk	Milled rice, raw shell fish, & fresh water fish destroys
Circulatory	*heart stop *poor circulation *enlarged heart	*heart palpatations *high blood pressure		Alcohol delpetes
Immune			Meats: organ meat pork	
Endocrine	*fatigue *high blood sugar *not able to gain weight *weak adrenal glands			

Vitamin B1				
Type	Water Sol	Names: Thiamine, Thymine Pyrophosphate		
RDA	1.1-1.5 mg/pd (skinny)			
System	Deficiency	Overdose	Sources	Interactions
Muscular	*leg cramps *muscle fatigue *muscle wasting		Grains: oatmeal (cooked) whole wheat bread wheat germ	
Reproductive	*PMS			
Renal			Fats: sunflower seeds peanut	
Diseases	*Beriberi			
Other			Other: black strap molasses	
Special Dosages				
Info	<p>Thiamine B1 Works better with other B vitamins present essential nutrient, for biochemical reactions especially good for brain and nervous system energy Best taken in the morning, with food B1 is one ingredient in the coenzyme TPP, that is required for breaking down carbs and certain amino acids AND the production of DNA & RNA *works in intestines to break down fat & protein *helps lower blood sugar, cholesterol *helps maintain healthy weight *helps convert carbs to energy (mito) *converts AA (pyruvate) to Acetyl Co A *needed for brain and nerve function *healthy skin, mouth, eyes, hair *needed for learning capacity Greater than 400 mg/d = very toxic overdose</p>			

Vitamin B2				
Type	Water sol	Names: Riboflavin, Riboflavin 5'-Phosphate		
RDA	1.1-1.5 mg/pd (energy)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*skin disorders *cracks & red at the sides of the mouth *inflamed skin marked by lesions with greasy scales		Fruit: apples	
Sensory	*very sensitive to light *swollen eyelids *red/pink cornea			
Nervous		*dizzy *insomnia	Vegetable: broccoli spinach green leafy veg brussels sprouts mushrooms	
Digestive	*painful, smooth purplish tongue	*nausea *vomiting		
Respiratory				
Skeletal			Dairy: milk cheese eggs yogurt	
Circulatory				
Immune			Meats: beef liver lean meats	
Endocrine				
Muscular			Grains: pasta corn flakes	
Reproductive				
Renal			Fats: almonds	
Diseases	*ariboflavinosis (pallegra)			
Other			Other:	

Vitamin B2				
Type	Water sol	Names: Riboflavin, Riboflavin 5'-Phosphate		
RDA	1.1-1.5 mg/pd (energy)			
System	Deficiency	Overdose	Sources	Interactions
Special Dosages	*Migraine (400 mg for 3 months... stats reduce migraine by 50%)			
Info	<p>Riboflavin B2 Works best when taken with other vit B's, to make energy B2 is ingredient in coenzymes FMN & FAD *Responsible for flourescent urine *supports mitochondrial function and generate ATP(energy) *improves thyroid function *helps protect nerves, especially under stress *supports adrenal glands, especially under stress *needed to make glutathione, a free radical scavenger *needed to build RBC's *prevents inflammation *helps with weight loss by burning fat & glucose *responsible for pretty hair, nails, skin *helps convert food to energy *helps immune system to function properly *changes the amino acid tryptophan into niacin</p>			

Vitamin B3				
Type	Water Sol	Names: Niacin		
RDA	12-18mg/pd (vasodilator)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*swelling of mouth *bilateral symmetrical rash *flushing where exposed to sun *excessive sweat *hives *red, painful skin	*burning, tingling, itching arms * chest	Fruit:	nicotine kills B3
Sensory	*blurry vision	*blurry vision *vision problems		alcohol kills B3
Nervous	*mental confusion *irritable *depression *apathy *fatigue *memory loss *headache	*confusion *insomnia	Vegetable: potato with skin legumes	processed foods kill B3
Digestive	*diarrhea *smooth tongue *abdominal pain *vomiting *nausia *inflammed *swollen mouth *bright red tongue *liver damage	*duodenal ulcer *if overdose (300mg+) liver damage *jaundice *high stomach acid		too much of other B vitamins/out of balance kills B3
Respiratory				
Skeletal		*joint pain *calcium loss	Dairy: milk eggs	
Circulatory		*high cholesterol		
Immune			Meats: chicken	

Vitamin B3				
Type	Water Sol	Names: Niacin		
RDA	12-18mg/pd (vasodiolater)			
System	Deficiency	Overdose	Sources	Interactions
Endocrine	*impaired glucose tollerance	*high blood sugar	chicken turkey cod fish tuna	
Muscular			Grains: whole wheat barley	
Reproductive		*PMS		
Renal		*high uric acid	Fats: peanut almonds	
Diseases	Pallegra			
Other		*sweating	Other:	
Special Dosages				
Info	<p>Niacin Vit B3 is best taken in small doses through the day or in a time released formula Works best with B1 (Thimine) for energy production in cells (mito) B3 is an ingredient it coenzyme NAD & NADP used in making energy *needed to process AA, tryptophan *helps turn carbs into energy *helps enzymes to function *maintains healthy nerves *maintains healthy skin *opens blood vessels and capillaries *lowers bp *lowers cholesterol *works harder that statin drugs to keep heart safe *lowers LDL *increases HDL *lowers anxiety</p>			

Vitamin B4				
Type	Water sol	Names: Choline		
RDA	425-550 mg/pd (neurotransmitters)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary		*very sweaty *strong body odor	Fruit:	
Sensory				
Nervous	*insomnia *nervous problems	*dizzy	Vegetable: potato cauliflower lentils	
Digestive	*liver damage	*vomitting *high saliva		
Respiratory				
Skeletal			Dairy: egg yolk butter	
Circulatory	*fats accumulate in blood	*low blood pressure *faint		
Immune			Meats: beef liver	
Endocrine	*fatigue			
Muscular	*muscle problems		Grains: oats wheat germ	
Reproductive				
Renal	*kidneys do not extract enough uric acid		Fats: sesame seeds flax seeds peanuts	
Diseases				
Other		*if over 10-15 g/pd = unusual body odor *low growth rate	Other:	
Special Dosages				

Vitamin B4				
Type	Water sol	Names: Choline		
RDA	425-550 mg/pd (neurotransmitters)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>Vitamin B4 B4 needed for neurotransmitters acetylcholine & phospholipid *can be made by body in the by converting AA methoionine *keeps integrity of cellular membranes *allows nerves to command muscles *prevents homocytine in blood (prev ostioporosis & heart disorders) *reduces inflammation</p>			

Vitamin B5				
Type	Water sol	Names: Pantothenic Acid, Calcium Pantothenate, Pantethine		
RDA	4-5 mg/pd (metabolism)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*burning feet		Fruit:	*B5 in foods easily killed by processing
Sensory				
Nervous	*difficulty sleeping *tingling hands & feet *irritable *restless *apathy	*depression	Vegetable: broccoli sweet potato mushroom avocado	*too much reduces phosphorus which loses calcium
Digestive	*abdominal cramping *vomiting *nausea	*poor break down from protein to Amino Acid		
Respiratory				
Skeletal		*reduced phosphorus *calcifications	Dairy: yogurt milk eggs	
Circulatory		*elevated LDL triglycerides		
Immune			Meats: tuna salmon	
Endocrine	*fatigue *hypoglycemia	*severe fatigue		
Muscular			Grains: oats	
Reproductive				
Renal	*kidney stones	*edema *dehydration	Fats:	

Vitamin B5				
Type	Water sol	Names: Pantothenic Acid, Calcium Pantothenate, Pantethine		
RDA	4-5 mg/pd (metabolism)			
System	Deficiency	Overdose	Sources	Interactions
Diseases				
Other	*causes B1 deficiency		Other:	
Special Dosages				
Info	<p>Vit B 5 - essential to metabolize food, to synthesize hormones and cholesterol B5 is needed for more than 100 steps in synthesizing fats, neuro transmitters, steroids, hormones, making blood *an ingredient in Coenzyme A *helps release energy from carbs *aids in protecting hormones *aids in forming and breaking down amino acids (cell sized proteins) *grains must be whole and unprocessed *found in all plants and animals in some amount *lecithin rich foods naturally lower Vit B5 and raises phosphorus</p>			

Vitamin B6				
Type	Water Sol	Names: Pyridoxine, Pyridoxal-5-Phosphate(P5P)		
RDA	1.3-1.5 mg/pd (happy)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*skin disorders *scaly dermatitis	*skin lesions	Fruit: banana prune citrus	*destroyed by heat
Sensory				
Nervous	*convulsions *dizzy *depression *confusion *numbness with pins & needles pain *migraine	*numb hands & feet(only from pyridoxal not P5P) *irritable *nerve damage *numbness *convulsions *spinal nerve degeneration *increased dream activity *low estrogen triggered depression	Vegetable: avocado green bean green leafy veg cabbage potato	
Digestive	*smooth tongue *sore tongue			
Respiratory				
Skeletal		*osteoporosis *arthritis	Dairy: egg yolk	
Circulatory	*anemia	*high blood pressure if short OD *low bp if long term OD		
Immune		*low white blood cells (T cells only)	Meats: chix breast fish meat liver	
Endocrine		*hyperthyroid *if long time OD long time then switches to hypothyroid		

Vitamin B6				
Type	Water Sol	Names: Pyridoxine, Pyridoxal-5-Phosphate(P5P)		
RDA	1.3-1.5 mg/pd (happy)			
System	Deficiency	Overdose	Sources	Interactions
Muscular		*clumsy *deep fatigue *muscle damage *not able to walk *muscle cramps	Grains: bran cereal whole grains whole wheat brown rice	
Reproductive	*PMS	*low estrogen *low prolactin		
Renal	*kidney stones *edema		Fats: nuts	
Diseases				
Other	*abnormal EEG	*low pH with abnormal phosphorus-sodium ratio *low pH with abnormal magnesium-calcium ratio *manganese deficiency *calcium deficiency	Other: Honey Black Strap Molass.	
Special Dosages	*PMS = 50-100 mg, 2 weeks b/f period *higher dosages of B6 show lower odds breast cancer			

Vitamin B6				
Type	Water Sol	Names: Pyridoxine, Pyridoxal-5-Phosphate(P5P)		
RDA	1.3-1.5 mg/pd (happy)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>Vitamin B6</p> <ul style="list-style-type: none"> *the good mood vitamin B6 ingredient in PLP & PMP that help use certain AA's & fatty acids *helps convert food into energy *mito *promotes good mood *encourages deep sleep *increases serotonin *increases GABA *increases dopamine *regulates sex hormones *nourishes nerves and CNS *helps make DNA *makes RBC's *needed for relaxation *needed for deep sleep *reduced heart disease by lowering homocysteine (homocysteine = artery damage) *helps turn tryptophan into niacin & serotonin *helps produce insulin, hemoglobin & antibodies *vital for amino acid and protein reactions & absorption *helps maintain brain function *helps with digestion & healthy skin *forms antioxidants **taken too late in the day triggers vivid dreams 			

Vitamin B7				
Type	Water Sol	Names: Biotin		
RDA	25-30mcg/pd (beauty)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*brittle breaking nails *hair falling out *red scaly rash@ eyes, nose & mouth		Fruit:	take with probiotics for better absorption
Sensory				can be destroyed by intake of large amounts of raw egg white
Nervous	*depression *lethargy *depression *numb/tingling sensations (esp in arms and legs)		Vegetable: leafy greens cauliflower	excess = increases Vit C & B6 needs
Digestive	*nausea *vomiting *pallor *sore smooth tongue			
Respiratory				
Skeletal			Dairy: eggs	
Circulatory				
Immune			Meats: liver poultry beef salt water fish	
Endocrine		*slowed insulin release = elevated blood sugar		
Muscular	*muscle pain		Grains: all whole grains beans peanuts nuts	
Reproductive				
Renal			Fats:	

Vitamin B7				
Type	Water Sol	Names: Biotin		
RDA	25-30mcg/pd (beauty)			
System	Deficiency	Overdose	Sources	Interactions
Diseases				
Other	*Krebs cycle sluggish (ie pre mito)		Other:	
Special Dosages				
Info	Vitamin B7 B7 acts as a coenzyme in AA metabolism & glycogen synthesis *made by microorganism in intestines *essential for metabolizing food into energy *helps prevent nervous system disorders* *great for heart, pancreas & liver *restores grey hair back to original color			

phytic

Vitamin B8				
Type	Water Sol	Names: Inositol, phytic acid, phytates		
RDA	425-550mg/pd (calming)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*patchy hair loss *eczema	*rash (acne like)	Fruit: oranges limes grapefruit (not lemon) cantaloupe	*high caffeine reduces
Sensory	*eye abnormalities *peripheral neuropathy			*high alcohol reduces
Nervous	*memory loss *mental disorders *panic attack *anxiety attack *bi-polar *bulimia *agoraphobia	*dizzy	Vegetable: dried peas leafy greens beans nuts seeds	
Digestive	*constipation *fatty liver *low bile production	*nausea *vomit *liver disease		
Respiratory				
Skeletal			Dairy:	
Circulatory	*hardened arteries *low blood pressure *low HDL cholesterol	*cardio vascular disease *high blood pressure		
Immune			Meats: calves liver pork veal	
Endocrine	*insulin resistance			
Muscular			Grains: wheat germ peanuts lentils beans (from dry)	
Reproductive	*Polycystic Ovaries(POCS)			

Vitamin B8				
Type	Water Sol	Names: Inositol, phytic acid, phytates		
RDA	425-550mg/pd (calming)			
System	Deficiency	Overdose	Sources	Interactions
Renal		*kidney disease	Fats:	
Diseases	*MS *Nerve complication of diabetes			
Other	*oxidative cell damage	OD = increases magnesium & potassium requirements	Other:	
Special Dosages				
Info	Vitamin B8 *helps nerves function properly *helps neurons communicate with nervous system *helps calm nerves to prevent Alzheimer's, Panic Attacks, Depression, etc. *transports fats *vital for hair/nail growth *combines with choline = prevents high cholesterol *reduces and relieves constipation			

Vitamin B 10				
Type	Water Sol		Names: Para-Aminobenzoic Acid (PABA)	
RDA	n/a (was in sunscreen or as nutritional supplement -outlawed some places, not advised as a supplement)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*Sunburn from UV rays	*jaundice *rash	Fruit:	OD= increases Vit C, Vit B6 needs
Sensory				
Nervous			Vegetable:	
Digestive	*reduced natural folic acid production in small intestine	*liver disease *nausea *vomiting		
Respiratory		*some breathing probs		
Skeletal			Dairy:	
Circulatory				
Immune			Meats:	
Endocrine	*hyperthyroid	*hypothyroid		
Muscular			Grains:	
Reproductive	*increases estrogen break down in liver			
Renal			Fats:	
Diseases				
Other			Other: Sunscreen	
Special Dosages				
Info				

Vitamin B9				
Type	Water Sol		Names: Folate /Folacin	
RDA	300-400 mcg/pd (oxygen shuttle)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*pale skin		Fruit: orange OJ	*destroyed by heat & oxygen
Sensory				*birth control pill destroys
Nervous	*depression *irritable *confusion *forgetful *stroke *headache *irritable		Vegetable: peas asparagus raw spinach coked broccoli cabbage lettuces	*woks with Vit B12 to make RBC's
Digestive	*smooth tongue *diarrhea	*abdominal bloating *nausea *no appetite		*OD = need for increased zinc and potassium
Respiratory				
Skeletal			Dairy:	
Circulatory	*atherosclerosis (hardening of arteries) *heart disease *high LDL's *heart attack *anemia *megaloblastic anemia (lg blood cells, immature = DNA issues) *increases homocysteine			*makes some forms of childhood leukemia worse
Immune			Meats: chicken liver	
Endocrine				
Muscular	*weakness *fatigue		Grains: kidney beans	

Vitamin B9				
Type	Water Sol		Names: Folate /Folacin	
RDA	300-400 mcg/pd (oxygen shuttle)			
System	Deficiency	Overdose	Sources	Interactions
Reproductive	*HPV *cervical cancer *cervical dysplasia		bran cereals dry beans seeds	
Renal	*kidney disease	*kidney damage	Fats:	
Diseases		*increases certain cancers if OD B9 & B12 together		
Other			Other:	
Special Dosages				
Info	<p>Vitamin B9 (2 types) Natural = folate Man Made = Folic Acid (body converts to folate) B9 is an ingredient in coenzymes THF & DHF which is used in DNA processes *essential for normal cell production *helps form hemoglobin *shuttles oxygen *best vitamin to prevent cancer (esp HPV, cervical, colon) *reduces heart disease risk by lowering homocysteine (homo= hardens artery) *helps prevent neural tube defects in fetus *converts tryptophan into serotonin *needed for DNA synthesis *mito *needed for bone growth *needed for RBC production</p>			

Vitamin B 11				
Type	Water Sol	Names: Choline		
RDA	425-550 mg/pd (helper)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary		*acne like skin rash	Fruit:	
Sensory				
Nervous	*mental disorders *poor memory *reduced learning capacity *alzheimer's *depression *tourette's *ataxia	*dizzy	Vegetable: Green Leafy Veg	
Digestive	*low bile production *gall stones	*nausea *vomiting		
Respiratory	*asthma			
Skeletal			Dairy: Eggs	
Circulatory	*low blood pressure *low HDL cholesterol	*cardio vascular disease *high BP		
Immune			Meats: Liver Meats	
Endocrine				
Muscular	*fatigue		Grains: Brewers Yeast Unrefined Whole Grains	
Reproductive				
Renal	*kidney stones	*kidney disease	Fats:	
Diseases				

Vitamin B 11				
Type	Water Sol	Names: Choline		
RDA	425-550 mg/pd (helper)			
System	Deficiency	Overdose	Sources	Interactions
*Other	*Oxidative cell damage	*OD increases magnesium and potassium requirements	Other:	
Special Dosages	*for asthma = 500-1000 mg/pd 3x pd			
Info	B11 *Can be made in liver *Choline supplements, apart from food, increases sodium retention and lowers riboflavin (B2) *needed for many chemical reaction in body *helps reduce swelling, esp lungs			

Vitamin B12				
Type	Water sol	Names: Cobalamin (methyl or adenosyl) Hydroxy		
RDA	2.4 mcg/pd (brain's friend)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*pale skin *sensitive skin	*rash	Fruit: banana	*wks w B9 to make RBC's
Sensory				
Nervous	*poor sleep *seizures *Alzheimers *numb fingers/ toes *lack of balance *confusion *dementia *headache	*pins & needles in fingers & toes if long term, especially if without Folic Acid *insomnia *numbness/tingling RIGHT arm & face *anxiety *panic attack	Vegetable:	
Digestive	*pale mucous membranes *smooth sore tongue *poor appetite *nausea			
Respiratory	*short of breath			
Skeletal			Dairy: eggs cottage cheese cheese milk	
Circulatory	*heart disease *anemia	*hypokalemia *heart palpitations		
Immune	*reduced White Blood Cell & Platelet formation		Meats: chicken other poultry ham fish beef tuna oysters	
Endocrine	*weight loss	*hyperthyroid		

Vitamin B12				
Type	Water sol	Names: Cobalamin (methyl or adenosyl) Hydroxy		
RDA	2.4 mcg/pd (brain's friend)			
System	Deficiency	Overdose	Sources	Interactions
Muscular	*weakness *pain in arms & legs *fatigue, if continues then progresses to paralysis		Grains: bran peanuts	
Reproductive				
Renal			Fats:	
Diseases	*Pernicious Anemia	*triggers some types of Leukemia		
Other		OD = increased need for B15	Other:	
Special Dosages				
Info	<p>Vitamin B12 *manufactured in the gut, yeast, mold, algae, bacteria B12 is an ingredient in coenzymes needed to help maintain nerve cells, break down fatty acids and some AA's *makes RBC *helps repair damaged myelin sheath in neurons *reduces pain *helps prevent seizures *increases melatonin release during sleep cycle *lowers homocysteine/heart disease *plays vital role in many body chemicals *helps metabolize fatty acids *helps maintain normal function of nervous system *helps build DNA *mito *If injections, take in the AM</p>			

B 13				
Type	Water Sol	Names: Orotic Acid, uracil 4-carboxylic acid		
RDA	(not recognized any longer)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary			Fruit:	
Sensory				
Nervous			Vegetable: root veggies	
Digestive	*liver disorders	*fatty liver		
Respiratory				
Skeletal			Dairy: *whey powder *goats milk *sheep milk *cows milk *yogurt	
Circulatory		*increases cholesterol		
Immune			Meats: *liver *beef	
Endocrine				
Muscular			Grains:	
Reproductive		*premature birth		
Renal		*increased ammonia	Fats:	
Diseases		*retardation		
Other	*premature aging *cellular degeneration	*decreases mito ATP production *can trigger gene mutations	Other: *manufactured in human intestine *bakers yeast	
Special Dosages				

B 13				
Type	Water Sol	Names: Orotic Acid, uracil 4-carboxylic acid		
RDA	(not recognized any longer)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>B 13 *manufactured in the intestines, by the good bacteria Deficiency becomes possible with yeast infections, antibiotic use, chronic illness, synthetic laxatives, poor diet, leaky gut, etc., but is rare</p> <p>B13 is still on the “big mystery” list for science, so there is not a ton of info available *1904 Discovered in whey *promoted growth of lactobacilli streptococci & neurospora in cows *when combined with certain grains stimulated growth and protects livers in dairy cows *helps int he absorption of calcium and magnesium *Helps produce genetic material via mito enzyme *carries minerals *B13 levels are higher in breast milk of smoking mothers in pregnancy and nursing, affecting the child’s health *helps with DNA & RNA synthesis *enhances albumin production in the liver</p>			

Vitamin B 15				
Type	Water Sol	Names: Pangamic Acid, Calcium Pangamate		
RDA	N/A ~ but 25mg+ is ok			
System	Deficiency	Overdose	Sources	Interactions
Integumentary			Fruit:	
Sensory				
Nervous	*some panic disorders *learning difficulties *drug addictions	*depression *headaches	Vegetable:	
Digestive				
Respiratory	*short of breath *asthma	*short of breath		
Skeletal			Dairy:	
Circulatory	*angina (rt side) *coronary artery spasm (rt side) *some high BP	*Pernicious anemia (from long term OD)		
Immune			Meats: Organ Meats	
Endocrine				
Muscular		*severe fatigue	Grains: Brewers Yeast Whole Grains Brown Rice Pumpkin Seeds Sunflower Seeds	
Reproductive				
Renal			Fats:	
Diseases				
Other	*Vit 12 injection overdose will reduce B15 *Increases lactic acid	*increases need for Vit B12	Other:	

Vitamin B 15				
Type	Water Sol	Names: Pangamic Acid, Calcium Pangamate		
RDA	N/A ~ but 25mg+ is ok			
System	Deficiency	Overdose	Sources	Interactions
Special Dosages				
Info				

Vitamin C				
Type	Water Sol	Names: Ascorbic Acid		
RDA	10-100mg/pd (wellness)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*pinpoint hemorrhages (small red misshapen circles) *wrinkles (collagen break down) *tooth loss		Fruit: Orange Strawberry Fruit Juice Kiwi Grapefruit juice lime	*chewing tobacco, cigarettes, heavy metals, daily long term use of Rx's and OTC medicines: kill Vit C
Sensory	*floaters (b/c collagen break down) *cataracts			*counteracts anti-clotting meds
Nervous	*hysteria *depression		Vegetable: Spinach Broccoli Tomato Juice Avocado Red Bell Pepper Brussels Sprouts	*high iron + high Vit C= iron toxicity = free radical damage
Digestive	*gums with symmetrical red marks (scurvy)	*nausea *abdominal cramping *diarrhea *rectal bleeding *weak/breaking teeth		*will give it's life for other water soluble solutions by sharing electrons
Respiratory				*stress eats vit C
Skeletal	*painful connective tissue *painful cartilage		Dairy:	*helps heal burns & infections
Circulatory	*anemia			
Immune	*poor wound healing *allergies		Meats:	
Endocrine				
Muscular			Grains:	

Vitamin C				
Type	Water Sol	Names: Ascorbic Acid		
RDA	10-100mg/pd (wellness)			
System	Deficiency	Overdose	Sources	Interactions
Reproductive		*elevated estrogen		
Renal			Fats:	
Diseases	*peristachial rash *scurvy			
Other	*spontaneous internal bleeding *sudden death		Other:	
Special Dosages	<p>VITAMIN C 10 mg/pd prevents scurvy 30 mg/pd supports metabolism 75 mg/pd RDA for women 90 mg/pd RDA for men 100 mg/pd saturates tissues 200 mg/pd, most washed out of cells into urine, little increase shown in blood above 100mg/pd levels 2000 highest level allowable for adults for therapeutic reasons 3000 overdose/adverse consequences</p> <p>Special Dosages *surgery = increase dosage to 1000 mg/pd post surgery to increase healing speed *allergies = 50-100 mg (combined with 30 mg zinc) ((for rescue days)) *scurvy = to reverse 100 mg p.day for 5 days *if 10x RDA for more several weeks = body excretes extra, but if stop abruptly = not normal clearance patterns, so causes a deficiency... so decrease slowly. *nasal congestion/not able to sleep = take 1000-2000 mg just before bed</p>			

Vitamin C				
Type	Water Sol	Names: Ascorbic Acid		
RDA	10-100mg/pd (wellness)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>Vitamin C</p> <ul style="list-style-type: none"> *needed to keep integrity of blood vessels *can give false reading for diabetes (+/-) *if kidney disease = can cause gout or kidney stones *good for heart valves, capillaries and heart in general *natural cholesterol reducer *creates collagen *helps form connective tissue, teeth, bones *"glues" skin together in the scarring process *helps convert AA tryptophan into the neuro transmitters serotonin & norepinephrine *helps make hormones: thyroxin, which helps control metabolism *reduces histamine by deactivating histamine in a similar way to antihistamines <p>RDA from food... typically don't need to add any from "pills"</p> <ul style="list-style-type: none"> 1 Cup OJ 1 Salad 1 Stalk broccoli 1 Potato 			

Vitamin D				
Type	Fat Soluble	Names: Calciferol		
RDA	600 IU (calcium's friend)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*dental problems		Fruit:	*sunscreen with paraben blocks Vit D
Sensory	*gradual hearing loss			*sunscreen with benzopheone blocks Vit D
Nervous	*SAD (seasonal affective disorder)	*Hemiplegic Migraine *elevated calcium = excited activity *apathy *headache *backache *apathy *anorexia	Vegetable: mushroom	*sunscreen with cinnamate blocks Vit D
Digestive		*low appetite *nausea *vomiting *extreme thirst		
Respiratory	*severe asthma	*hardens blood vessels can cause death		

Vitamin D				
Type	Fat Soluble	Names: Calciferol		
RDA	600 IU (calcium's friend)			
System	Deficiency	Overdose	Sources	Interactions
Skeletal	*knock knees *spinal curvature disorders (like scoliosis, etc) *rickets (small, bowed legs, big belly, weak bones) *osteomalacia (adult rickets: (30 yrs+ typ preg or nursing, bowed legs, rounded back) *ostoporosis (elderly, not synthesise D from foods, b/c kidneys weaken and or low calcium food intake and more time indoors), weak bones, rounded back *brittle bones	*bone pain	Dairy: Milk	*complete cloud cover reduces natural UV energy by 50%, shade 60%, so less Vit D is made in those types of exposure
Circulatory		*↑ in blood = ↑serum calcium *hardening of vessels can cause death *calcium deposits in cardiac region *arrhythmia		*sunscreen limits the amount of Vit D the skin can absorb from the sun *low in D, do not wear makeup with sunscreen
Immune			Meats: Veal Beef Egg Yolk Liver Fatty Fish	
Endocrine				*poorly functioning intestines will cause a deficiency

Vitamin D				
Type	Fat Soluble	Names: Calciferol		
RDA	600 IU (calcium's friend)			
System	Deficiency	Overdose	Sources	Interactions
Muscular	*rheumatic pain *muscle weakness	*back pain	Grains: Cereal w/ added	*weak kidneys will also reduce Vit D conversion
Reproductive				
Renal	*weak kidneys can cause	*kidney stones *high volume urine output that is very diluted	Fats: Butter Fish Oil	*dysfunctioning liver will reduce Vit D conversion
Diseases	*cancer *Chron's *Cystic Fibrosis *Celiac's *Obesity			
Other	*increases parathyroid levels and that leeches calcium out of bones		Other: Sun -10-15 min light skin, 30 min dk skin (NOT from tanning bed or lamps)	
Special Dosages				

Vitamin D				
Type	Fat Soluble	Names: Calciferol		
RDA	600 IU (calcium's friend)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>Vit D Calciferol is a hormone *targets over 2000+ genes **Typical dosage from sun only is 5-30 minutes direct sun exposure on face, arms, legs, back without sunscreen (more fair skin = less time, darker skin = more time), between 10am - 3pm, tanning beds are not a replacement for they only give out 2% of the Vit D, and increase the UV radiation cancerous exposure *Has binding protein that carried to target cells (gc-globulin made in liver) *Low in protein = food passes through intestines with out absorption *Target organs = intestines, kidney, bones *Target organs respond to Vit D by MAKING calcium *On bone building team including: Vit C, A, K, Calcium, Parathyroid hormones, Calcitonin, Collagen, Phosphorus, Magnesium, Fluoride *Maintains blood concentration & absorption of calcium and phosphorus = more dense bones = increased strength *Works w/ brain & nervous system, pancreas, skin, muscles, cartilage, reproductive organs, and cancer cells *reduces 17+ types of cancer (including breast, prostate, colon) *reduces diabetes *reduces chronic pain *curbs food cravings Vit D Overdose, is typically only from supplements or too much milk with vit D added, diff to OD from food, but it causes high serum calcium.</p>			

Vitamin E				
Type	Fat Soluble	Names: alpha-tocopherol		
RDA	15 mg/pd (22.4 IU) (antioxidant)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary		*bruise easily	Fruit: Kiwi mango tomato	heat kills Vit E, so fried foods = fat but no Vit E
Sensory		*double vision		
Nervous	*neuro muscular dysfunction * spinal cord dysfunction * eyes dysfunction (neuro related)	*irritable *drowsy *seizure *increased chances of stroke	Vegetable: leafy greens broccoli spinach corn	
Digestive		*nausea *vomiting *abdominal cramps *diarrhea		
Respiratory				
Skeletal			Dairy:	
Circulatory	*RBC's break open and spill blood out (erythrocyte hemolysis)	*clotting action of Vit K hampered (ez bleed not clot)		
Immune			Meats: egg yolk	
Endocrine				
Muscular	*leg cramps	*muscle pain with weakness	Grains: wheat germ sunflower seeds hazelnuts peanut butter	
Reproductive	*fibrocystic breast disease			
Renal		*high creatinine in urine	Fats: oil	

Vitamin E				
Type	Fat Soluble	Names: alpha-tocopherol		
RDA	15 mg/pd (22.4 IU) (antioxidant)			
System	Deficiency	Overdose	Sources	Interactions
Diseases			nuts seeds	
Other			Other:	
Special Dosages				
Info	<p>Vit E 4 Tocopherol's 1) Alpha tocopherol (only one with "vit E" activity in body 2) Beta tocopherol 3) Gamma tocopherol 4) Delta tocopherol Tocopherol's = complex ring like structures with long sat side chain, component in all veggie oils, and needed for reproduction</p> <p>Vit E = antioxidant, deficiency is rare *primary defense against free radicals for body *protects cell membrane from destruction prevents oxidation of PUFAS (poly unsaturated fatty acids) *protects other lipids (fats) and other complimentary like Vit A *lowers risk for heart attack *protects LDL's against oxidation *protects against cancer *enhances sexual performance *cures sexual dysfunction in males (does NOT prevent grey hair or Parkinson's as some say)</p>			

Vitamin K				
Type	Fat Soluble	Names: Ketamine, Phylloquinone (K1), Menaquione (K2), Menadione (K3)		
RDA	75-90 mcg.pd (clotting)			
System	Deficiency	Overdose	Sources	Interactions
Integumentary	*bruising		Fruit:	
Sensory				
Nervous		*brain damage	Vegetable: Green leafy veg Cruciferous Veg Darker Lettuces Parsley	
Digestive	*bruising of gums	*liver toxicity		
Respiratory				
Skeletal	*weak bones *osteoporosis		Dairy: Eggs	
Circulatory	*hemophilia (no clotting) *bleeding *heart disease	*red blood cell hemolysis *anemia		
Immune			Meats: Fish Meat	
Endocrine		*jaundice		
Muscular			Grains:	
Reproductive	*heavy menstrual bleeding			
Renal			Fats:	
Diseases				
Other			Other: made by Intestinal bacteria	
Special Dosages				

Vitamin K				
Type	Fat Soluble	Names: Ketamine, Phylloquinone (K1), Menaquione (K2), Menadione (K3)		
RDA	75-90 mcg.pd (clotting)			
System	Deficiency	Overdose	Sources	Interactions
Info	<p>Vit K cannot be obtained from any food source, GI bacteria synthesizes foods and creates Vit K so that it becomes absorbable *Job = primarily in clotting, without any Vit K, all your blood, if cut would drain out in a few minutes *Vit K = "GLUE" *Vit K activated several proteins to cause blood to clot *Vit K also binds minerals together in bones *If large intestine is not working properly then Vit K cannot be absorbed into blood to be used by body, typically after antibiotic use *Large intestine can convert K1 to K2 via e.coli bacteria *K3 = synthetic and is toxic *Liver damage, long term aspirin use, cystic fibrosis & inflammatory bowel disease can cause deficiency *Overdose only typically from supplementation</p>			