

Alphabet Soup: Making Sense of Vitamin & Mineral Supplements

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Participant Lesson Plan for Alphabet Soup

After completing this lesson, participants will:

1. Identify the reasons for taking vitamin and mineral supplements.
2. Explain how/when specific supplements can be used
3. Recognize the dangers of taking specific supplements, either in excess, or in combination with other supplements and/or prescription drugs.
4. Create an individual plan, including questions for a doctor/physician, related to the use of supplements.

NOTE: The information presented in this lesson is for general informational purposes, and may not be appropriate for everyone. Participants should always consult a doctor/physician before making decision regarding dietary supplements, health or medical issues.

Prescription Medicines that I Currently Take:

Supplements that I currently take—based on my doctor's recommendation:

Supplements that I currently take—because I think I need them:

Possible Interactions or Excessive Amounts of Specific Supplements that I Identify:

Questions for My Doctor/Physician:

1.

2.

3.

4.

5.

6.

A Few Facts.....

- Americans have been taking vitamin/mineral supplements since as early as the 1940s, when the products first became available.
- It is estimated that nearly 1/3 (33%) of Americans take some form of dietary supplement.
- In 2011, sales of dietary supplements in the US totaled nearly \$30 billion.
- Research indicates that females are more likely than males to take supplements.
- By age 71, nearly 48% of women and 43% of men take some sort of Supplements.
- Typically, people with healthier diets and lifestyles are more likely to use supplements.

Is There A Need?

- There are many good reasons to take supplements. A doctor may recommend them for:
 - **Certain health problems
 - **A vegetarian or vegan diet
 - **Women of child-bearing years
 - **Pregnant or breastfeeding mothers
- According to the Dietary Guidelines for American, many people consume more calories than what they need, and still do not take in recommended amounts of nutrients (vitamins/minerals).
- Vitamins and minerals are based on the Food & Nutrition Board's Recommended Dietary Allowance (RDA) and Adequate Intake (AI). These are amounts that people (in general) should ingest daily.
- Most nutrition experts agree that it is best for generally healthy people to obtain their vitamins, minerals, and other nutrients from FOOD, rather than pills. Even more reason to eat a balanced, healthy diet.

Vitamins

Vitamin	Importance	Foods
Vitamin A (Retinol)	Healthy teeth, bones, soft tissue, mucus membranes, and skin	Liver, eggs, milk
Vitamin D	Keeps bones strong and reduces bone loss, maintains proper blood levels of calcium and phosphorus	Sunshine, canned and fresh fish, egg yolk, milk, margarine
Vitamin E	Antioxidant, formation of red blood cells, helps the body use Vitamin K	Vegetable oils, beans, eggs, whole grains, liver, fruits, vegetables
Vitamin K	Promotes blood coagulation and promotes bone health	Spinach, lettuce, kale, cabbage, cauliflower, liver, egg yolk
Vitamin C	Antioxidant, promotes healthy teeth & gums, absorption of iron, healthy tissue, wound healing	Turnip greens, green peppers, kale, broccoli, mustard greens, citrus fruits, strawberries, currants, tomatoes

Vitamin	Importance	Foods
Vitamin B1 (Thiamin)	Changes carbohydrates to useable energy, heart function, healthy nerve cells	Whole grain products & cereals
Vitamin B2 (Riboflavin)	Works with other B vitamins, body growth, production of red blood cells	Leafy vegetables, enriched & whole grain breads, live, cheese, lean meats, eggs and milk
Vitamin B6 (Pyridoxine)	Red blood cell formation, brain function, proteins that are part of many chemical reactions	Live, whole grain cereals, potatoes, red meats, green vegetables, yellow corn
Vitamin B12 (Cyanocobalamin)	Metabolism, red blood cell formation, maintenance of the nervous system	Organ meats, lean meats, fish, milk, eggs, shellfish
Niacin	Maintains healthy skin & nerves, and has cholesterol lowering effects	Liver, lean meats, peas, beans, enriched and whole grain cereals, fish

Minerals

Mineral	Importance	Foods
Calcium	Builds strong bones & teeth (when paired with Vitamin D)	Milk, other dairy products, broccoli, dark green leafy veggies, fortified foods
Phosphorus	Forms healthy bones & teeth, energy production, creation of cell membranes, cell function	Dairy foods, meal, fish
Magnesium	Muscle and nerve function, steadies the heart rhythm, keeps bones strong, creates energy, makes proteins	Whole grains, nuts, seeds, green leafy vegetables, potatoes, beans, avocados, bananas, milk, chocolate
Potassium	Heart, muscle, nervous system function; water balance	Broccoli, potatoes (w/skins), green leafy veggies, citrus fruits, bananas, dried fruits, legumes
Sodium	Controls blood pressure & blood volume, muscle & nervous system control	Table salt, milk, beets, celery, drinking water, processed meats and foods, fast foods
Chloride	Proper balance of body fluids & is an essential part of digestive juices	Table salt, seaweed, rye, tomatoes, lettuce, celery, olives
Copper	Creation of red blood cells, healthy immune system, wound healing, hair pigmentation, fights free radicals	Oysters, whole grains, liver, shellfish, green leafy veggies, chocolate, nuts
Iodine	Makes thyroid hormones used to regulate growth, temperature, cell production, metabolism	Iodized salt, seafood, milk, navy beans
Iron	Allows red blood cells to carry oxygen to all parts of the body	Red meat, port, fish, shellfish, poultry, lentils, beans, soy foods, dark green veggies, raisins

Mineral	Importance	Foods
Manganese	Protects body cells from free radicals, metabolism & digestion, helps break down fats & cholesterol	Nuts, brown rice, cereals, whole grains
Selenium	Immunity, maintenance of reproductive system, normal growth, prevents fatigue, skin problems	Oysters, red meat, poultry, eggs, shellfish, cheese, nuts, seeds, beans, whole grains
Zinc	Growth, immunity, wound healing	Red meat, poultry, oysters, seafood, nuts, dried beans, dairy products, whole grains

The “Bottom Line”

- Many vitamins and minerals work together to promote health. It is important to ingest adequate amounts of each essential vitamin and mineral.
- Food sources are best but supplements are an option
- If you have a concern about the amount of a vitamin or mineral that you are ingesting, it is important to have a conversation with your doctor.

“Regulation” of Vitamin & Mineral Supplements

- Dietary supplements are products intended to supplement the diet. They are NOT drugs and are NOT intended to treat, diagnose, mitigate, prevent, or cure diseases.
- The FDA is in charge of establishing quality standards for dietary supplements to ensure their identity, purity, strength, and composition.
- Unlike drugs, dietary supplements do not require premarket review or approval by the FDA. Products can be marketed without the FDA's approval!
- Companies that manufacture dietary supplements are very “creative” when it comes to the way they advertise/promote their products.
- In addition, several independent organizations offer quality testing and allow products that pass these tests to display their seals of approval. These seals DO NOT guarantee that a product is safe or effective!
- Remember that the term “natural” does not always mean “safe”!
- A large percentage of “supplements” on the market are expensive gimmicks!
- All products labeled as dietary supplements must carry a Supplement Facts panel that lists the product's contents, amount active ingredients per serving, and other added ingredients.

BONE SUPPORT CAL-MAG-D COMPLEX

Supplement Facts		
Serving Size 3 Tablets Servings per container 30		
	Amount Per Serving	% Daily Values
Vitamin A (from natural mixed carotenoids, Betatene®)	2,550 IU	51%
Vitamin C (from Calcium Ascorbate)	150 mg	250%
Vitamin D3 (as Cholecalciferol)	450 IU	113%
Vitamin E (as Mixed Tocopherols)	15 IU	50%
Vitamin K (as Phytonadione)	75 mcg	94%
Vitamin B1 (from Thiamine Mononitrate)	7.5 mg	500%
Niacin (from Niacin, Niacinamide)	12 mg	60%
Vitamin B6 (from Pyridoxine HCl)	22.5 mg	1125%
Folic Acid	300 mcg	75%
Biotin	75 mcg	25%
Pantothenic Acid (from Calcium D-Pantothenate)	15 mg	150%
Calcium (from Calcium Rice Protein Chelate)	750 mg	75%
Magnesium (from Magnesium Rice Protein Chelate)	450 mg	113%
Zinc (from Zinc Rice Protein Chelate)	15 mg	100%
Selenium (from Selenium Amino Acid Chelate)	60 mcg	86%
Copper (from Copper Amino Acid Chelate)	1.5 mg	75%
Molybdenum (from Molybdenum Amino Acid Chelate)	150 mcg	200%
Inositol	15 mg	†
Choline (from Choline Bitartrate)	12 mg	†
Boron (from Boron Amino Acid Chelate)	1,500 mcg	†
Tocotrienols (from Tocotrienols 7.5%)	4.5 mg	†

† Daily Values not established.

Potential Dangers of Supplements

1. Supplements are most likely to cause side effects or harm when people take them instead of prescribed medicines or in combination with prescribed medicines.

Examples:

- Vitamin K can reduce the ability of the blood thinner Coumadin® to prevent blood from clotting
- St. John's wort can speed the breakdown of many drugs (including antidepressants & birth control pills), reducing those drugs' effectiveness.
- Antioxidant supplements (Vitamin C and/or E) may reduce the effectiveness of some types of chemotherapy.

2. Excess Vitamin A can result in headaches, dizziness, blurred vision, liver damage, reduce bone strength, and cause birth defects.
3. Excess Vitamin D can result in nausea, vomiting, poor appetite, constipation, weakness, weight loss, confusion, heart rhythm problems, and deposits of calcium and phosphate in soft tissues.
4. Smokers (and possibly former smokers) should avoid large amounts of Vitamin A as studies have linked an increased risk of lung cancer to excess amount of Vitamin A.
5. Taking excess amounts of vitamin A while pregnant can increase the risk of birth defects.
6. Taking excess Vitamin B3 (Niacin) may cause flushing, redness of the skin, and upset stomach.
7. Excess Vitamin B6 (Pyridoxine) may lead to nerve damage in the limbs, which could result in numbness, trouble walking, and pain.
8. Excess Vitamin C can cause upset stomach, kidney stones, and increased iron absorption.
9. Excess folic acid (folate) may potentially hide signs of Vitamin B12 (Riboflavin) deficiency, which can lead to nerve damage, if not detected.
10. Excess iron causes nausea, vomiting, and damage to the liver and other organs.

Myths About Supplements

1. Vitamins give you "pep" and "energy".
2. Organic or natural vitamins are nutritionally superior to synthetic vitamins.
3. Vitamin C "protects" against the common cold.
4. The more vitamins, the better
5. You cannot get enough vitamins from the conventional foods you eat.

What others have you heard?



Other Popular Supplements - (That may or may not be effective)

- Coenzyme Q-10 (CoQ10)- **May** maintain proper circulation, promote heart health, and decrease risk of heart attack and/or stroke
- Flaxseed Oil- **May** reduce cholesterol and triglyceride levels
- Glucosamine, Chondroitin, Methylsulfonylmethan (MSM), Hyaluronic Acid, Avocado Soybean Unsaponifiables (ASU) and/or Omega-3 Fatty Acids- **May** promote joint comfort and flexibility
- Ginkgo Biloba, Vinpocetine, Phosphatidylserine (PS), DHA, Huperzine A, and/or Supplementary Antioxidants- **May** improve memory, concentration, and focus
- Resveratrol- **May** reduce the risk of chronic diseases and/or aging
- There are also hundreds of “herbal,” “botanical,” “amino acids,” and “enzymes” available. There is no quick and effective “cure-all!” (And if there were, wouldn’t we all be doing it!?)

And since most of us are getting adequate vitamins and minerals through a healthy, balanced diet, many supplements are an expensive waste of time and money!



Remember.....



Don't
forget

- ⇒ Always check with your doctor/physician
 - ⇒ Do not self-diagnose
 - ⇒ Do not stop taking prescribed medicine
 - ⇒ Do not decide for yourself that you need supplements
 - ⇒ Do not stop taking supplements that your doctor/physician has recommend
- ⇒ Don't believe everything you read or see advertised
- ⇒ Read labels
- ⇒ Question dietary fads and new "studies"
- ⇒ More is not always better
- ⇒ What works for your friends, neighbor, sibling, spouse, etc. may not be right for you
- ⇒ There is no "quick, easy, cure-all"
- ⇒ Most of us can get the vitamins and minerals that we need from a well-balanced, healthy diet

REFERENCES:

Center on Rural Elderly/University of Missouri. Myths and facts about vitamins. *Nutrition Notions*, 2(1), 1-3., 2(1), 1-3.

Center on Rural Elderly/University of Missouri. Are vitamin and mineral pills for me? *Nutrition Notions*, 2(4), 1.

Centers for Disease Control and Prevention. (2011). *Vitamins and minerals*. Retrieved from <http://www.cdc.gov/nutrition/everyone/basics/vitamins/>

FDA Consumer Health Information, U.S. Food and Drug Administration. (2009). *Fortify your knowledge about vitamins*. Retrieved from www.fda.gov/consumer/update/vitamins111907.html

National Institute of Health Office of Dietary Supplements. (2013). *Dietary supplement fact sheet: Multivitamin/mineral supplements*. Retrieved from <http://ods.od.nih.gov/factsheets/MVMS-HealthProfessional/?print=1>

National Institute of Health Office of Dietary Supplements. (2010) *Dietary supplements: What you need to know*. Bethesda, Maryland: Office of Dietary Supplements.

Nemours, Teens Health. (2014). *Minerals*. Retrieved from http://kidshealth.org/teen/misc/mineral_chart.html

Tufts University (2012). Can supplement pills deliver on their promises? *Health & Nutrition Letter: Your Guide to Living Healthier Longer*, 30 (9), 5-8.

U.S. National Library of Medicine, National Institutes of Health. (2014). *Minerals*. Retrieved from <http://www.nlm.nih.gov/MedlinePlus/minerals.html>

U.S. National Library of Medicine, National Institutes of Health. (2014). *Vitamins*. Retrieved from <http://www.nlm.nih.gov/medlineplus/ency/article/002399.htm>

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