Simply Health in Practice:
Essential Patient Handouts For Nurse Practitioners
NPs are on the front lines of healthcare, helping patients every single day. But sometimes patients need additional information or reminders to take home with them, too. Studies have shown that when providers give patients evidence-based, relevant knowledge health outcomes can improve. Nurse practitioners are known for focusing on overall health and helping patients toward overall well-being and a healthy lifestyle.

That’s why ANPF, as part of our Simply Health in Practice initiative, has teamed up with our partner Pharmavite to provide high-quality, data-driven patient resource handouts on a variety of health issues to NPs so that they may better help their patients achieve optimum health outcomes.

ANPF provides the leadership, innovation and educational opportunities required for nurse practitioners to meet the healthcare challenges of the 21st century global community. It supports NP education, enables innovative research and provides the tools and resources to develop practice-based, data-driven solutions to public health problems.
What are Omega-3 Fatty Acids?
Omega-3 fatty acids are a sub-category of polyunsaturated fats that exist under the larger umbrella of dietary fats. Although the term “fat” is usually discussed within a negative context, omega-3 fatty acids are not only good, they are essential fats that should be included and encouraged in the diet.

From a nutritional and overall health perspective, research has demonstrated beneficial roles in the body for three omega-3 fatty acids: eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) and alpha-linolenic acid (ALA). EPA and DHA are long-chain omega-3 polyunsaturated fatty acids that are mainly supplied to the diet from marine-based sources such as salmon, tuna and sardines; those fish incorporate EPA and DHA into their fatty tissue by consuming algae.

In contrast, ALA is a relatively short-chain omega-3 polyunsaturated fatty acid that is naturally found in certain plant sources like flaxseeds, walnuts, olive oil and tofu. ALA is considered an essential fatty acid because it cannot be synthesized in the body and must be obtained through the diet. Although ALA can be converted to EPA and DHA, this conversion process is very inefficient. Since the average American consumes inadequate levels of EPA & DHA, supplements containing fish oil and/or regularly consuming fish in your diet are important for your health.

Why Do I Need Omega-3 Fatty Acids?
Omega-3s are critical to human health and support the structural integrity and fluidity of all cell membranes. EPA, DHA and ALA are incorporated into cell membranes and are necessary for effective cellular function and communication. Improving intake of omega-3s is important because these critical fats are lacking in the average American diet. Most people do not consume the recommended 1-2 servings of oily fish per week, and even the plant-based sources of ALA are not a widespread staple. In contrast, omega-6 fatty acids—found in safflower oil, corn oil, and other vegetable oils that are commonly used in cooking foods—are consumed in abundance. This imbalanced intake ratio of omega-6s to omega-3s may be as high as 20:1 for some and is associated with an increased state of inflammation.

How Do We know Omega-3s are Good for Our Health?
To date, a considerable amount of research consistently supports the beneficial effects of the EPA and DHA from fish and fish oil for cardiovascular health. In fact, the relationship between omega-3s and heart health is so strong that the FDA approved a qualified health claim, which states that “supportive but not conclusive research shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease.” While the role that these omega-3s play in heart health is by far the most extensively studied, DHA has also been shown to be essential for perinatal health (pregnancy, lactation and infancy), as DHA is involved in the normal eye and brain development. Ongoing research is also elucidating the potential role of omega-3s in skin, joint, cognitive and eye health.

How Much Omega-3s Do I Need?
Currently, a Dietary Reference Intake (DRI) exists for ALA (1.6 grams/day for males; 1.1 grams/day for females), and the development of DRIs for EPA and DHA is under discussion and will likely occur in the near future. To provide guidance for consumers and practitioners, many experts have spent time vetting the decades of fish oil research in order to propose intake guidelines for EPA and DHA. As a result, national and international guidelines have converged on the following evidence-based recommendations: a total of 250-500 mg of EPA and DHA per day for the general adult population and 1000 mg or more per day for individuals with heart health concerns. Greater fish oil amounts, up to 4 grams/day of EPA and DHA, are recommended for individuals with high triglycerides in conjunction with a healthcare professional. While it is useful to learn about these recommendations, all patients are encouraged to consult their primary healthcare professional regarding proper dosing.
Omega-3 Supplements

Fish oil, krill oil, algal oil and flaxseed oil are the four main omega-3 supplements available on the market. Below is a description of all four:

Fish Oil: Fish oil is a source of the omega-3s EPA and DHA. Fish oil formulas are available in a variety of strengths and can be enteric-coated to reduce a fishy flavor or aftertaste (“fish burp”) that some people experience. Salmon, mackerel, anchovies and sardines are among the most common sources used for fish oil. Fish oil goes through a rigorous purification process to reduce the levels of contaminants which may be present in the fish themselves.

Krill Oil: Krill oil, which is extracted from the small crustacean, is also a source of EPA and DHA, although at significantly lower levels than fish oil. At best, on a gram per gram basis, krill oil will have 67% content of EPA and DHA of fish oil due to it being in the phospholipid, rather than the triglyceride, form. Additionally, krill oil contains a small amount of astaxanthin and is recognized for having no fishy aftertaste or odor.

Algal Oil: Also known for having no fishy aftertaste or odor, algal oil, made from algae, is one of nature’s original sources of DHA and EPA. Unlike other sources of DHA and EPA, algal oil is a fish-free source of omega-3s, making it a wonderful option for vegetarians, vegans and those who avoid fish in their diet.

Flaxseed Oil: Flaxseed oil is a plant-based source of the omega-3 fatty acid ALA, and is especially convenient for people who avoid fish and shellfish in their regular diet.

Triglyceride vs. Ethyl Ester Fish Oil

Fish oil supplements are available in either the triglyceride or ethyl ester form depending on the molecular structure of the oil. Fish oil in the triglyceride form is the form found in nature and is composed of three fatty acids bonded to a glycerol backbone. Fish oil products in the natural triglyceride form will deliver at or around 300 mg EPA plus DHA per capsule.

Ethyl ester fish oil is a derived form in which the glycerol backbone is chemically removed in order to concentrate the fatty acids, which supports the inclusion of higher amounts of EPA plus DHA per capsule of reasonable size. Along with some fish oil supplements, prescription forms of fish oil also utilize the ethyl ester form. Ethyl ester fish oil products should be consumed with meal of adequate fat content for optimal absorption.

Omega-3 Safety

Omega-3 supplements like fish oil, krill oil, algal oil and flaxseed oil should be used with caution among pregnant or nursing women. Due to the slight blood thinning effect seen with such oils (particularly at levels ≥ 2000 mg per day), individuals taking blood thinning medication, facing surgery, with bleeding problems or undergoing any other treatment which may affect the ability of blood to clot should consult their healthcare professional before supplementing.

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The dietary supplement industry is regulated by the U.S. Food and Drug Administration and the Federal Trade Commission, as well as by government agencies in each of the 50 states.

REFERENCES

**How do Plant Sterols and Stanols Work?**

Plant sterols and stanols, referred to as phytosterols, are plant-derived compounds that are similar in structure to cholesterol, and competitively help block the absorption of cholesterol in the digestive tract. As a result of this activity, sterols and stanols help contribute to lower total, LDL and non-HDL cholesterol levels in the blood.

Phytosterols occur naturally in small amounts in many plant-based foods. A few foods and beverages, such as margarine and orange juice, are fortified with phytosterols, but the caloric price of these alternative fortified food sources can be high. For those who are interested in other forms, dietary supplements which come at little to no calories may provide another option for individuals interested in using phytosterols to manage their cholesterol levels.

Phytosterols from foods and dietary supplements have been studied in a variety of clinical settings. Well designed studies have demonstrated the cholesterol-lowering effects of phytosterols in tablet and softgel dietary supplement forms. Phytosterols have demonstrated efficacy in clinical studies in food forms such as margarine, yogurt, salad dressing, mayonnaise, and chocolate. Products containing at least 400 mg per serving of plant sterols and stanols, eaten twice a day with meals for a daily intake of at least 800 mg as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease.

**How Much Phytosterols are Naturally Present in Foods?**

<table>
<thead>
<tr>
<th>Name of Food Item</th>
<th>Quantity of Food Item</th>
<th>Quantity of Phytosterols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn oil</td>
<td>1 Tablespoon</td>
<td>134 mg</td>
</tr>
<tr>
<td>Olive oil</td>
<td>1 Tablespoon</td>
<td>24 mg</td>
</tr>
<tr>
<td>Corn</td>
<td>1 ear</td>
<td>63 mg</td>
</tr>
<tr>
<td>Apple</td>
<td>1 each</td>
<td>22 mg</td>
</tr>
<tr>
<td>Tomato</td>
<td>1 each</td>
<td>9 mg</td>
</tr>
</tbody>
</table>

**How Can I Get Plant Sterols and Stanols in My Diet?**

Plant sterols and stanols occur naturally in small amounts in plant-based foods such as unrefined vegetable oils, whole grains, nuts and legumes. However, in order to meet the recommended guidelines for cholesterol reduction through un-fortified food alone, one would need to consume an extraordinary amount to obtain the recommended 2 grams of sterols and stanols.

Another option for consuming phytosterols in the diet is to use fortified foods, such as spreads. These fortified foods provide a food-based option for phytosterols. This food-based option comes with a caloric cost so another option may be the use of phytosterol dietary supplements. When consuming a fortified food or dietary supplement, be sure to check the directions of use on the nutrition or supplement facts panel and aim towards 2 g (2,000 mg) phytosterols daily.

**What Does the Science Say?**

There is a large body of supportive research surrounding plant sterols and stanols as an option for lowering cholesterol.

Meta-analyses suggest LDL-C reductions of approximately three to four percent per gram of plant sterols/stanols. Although most of these studies have administered plant sterols/stanols in food forms, studies that tested...
dietary supplement forms found LDL-C reduction rates similar to those for food forms.\(^1,2\) The results from these studies indicated that daily incorporation of four dietary supplement tablets or softgels containing a total of 1.8 g of plant sterols/stanols into the Therapeutic Lifestyle Changes (TLC) diet (outlined below) resulted in favorable changes in concentrations of LDL-C and non-HDL-C levels in men and women with high cholesterol.\(^1,2\)

**What are the Current Guidelines and Recommendations for Cholesterol Management?**

Recent studies have shown that there has been a significant increase in the use of statins (cholesterol-reducing drugs) in the last several years.\(^3\) While statins are certainly effective, patients are also encouraged to incorporate a healthy diet and lifestyle modifications as part of their cholesterol management efforts.

To help patients manage their cholesterol levels, the National Cholesterol Education Program (NCEP), an umbrella program under the National Institutes of Health (NIH), issued recommendations, advising a decrease in dietary intake of total saturated fat, cholesterol and trans fat in their diets and an increase in soluble fiber (10-25 g/day), and consumption of plant sterols or stanols (2 g/day).

These recommendations came as an adjunct to the TLC program issued by the NIH for

- Weight management
- Diet
- Physical activity

**Discuss Your Cholesterol Management Regimen with Your Healthcare Professional**

Phytosterols have been studied in conjunction with cholesterol lowering medications however it is still important to discuss their use with a healthcare professional. A registered dietitian may be a good person to help decide on which food source(s) and/or supplement of phytosterols can be worked into your particular lifestyle.

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**REFERENCES**


**Essential Nutrients During Pregnancy and Breastfeeding**


**Why Do I Need a Multivitamin Supplement When I Am Pregnant and Breastfeeding?**

According to nationally representative research data, even if you eat a healthy diet every day, you may fall short on meeting recommended levels for key nutrients such as vitamin A, vitamin D, vitamin C, vitamin E, calcium, magnesium and zinc to name a few. As shown in the side bar, it can be difficult to meet all nutrient needs through diet alone. Supplementation with a quality prenatal and postnatal supplement can help fill those nutrient gaps to support the health of you and your developing baby during pregnancy and breastfeeding.

Pregnancy and lactation place higher calorie and nutrient demands on the body. Multivitamin/mineral supplements designed for pregnancy or breastfeeding contain nutrients critical to support the needs of both the mother and the growing baby, including but not limited to folic acid, iron, calcium, vitamin D and DHA, an essential omega-3 fatty acid.

**When Should I Begin Taking a Prenatal or Postnatal Vitamin?**

A prenatal multivitamin supplement should be taken by women of childbearing age who are trying to conceive and throughout pregnancy. The rationale for commencing your supplementation regimen prior to official pregnancy determination is to ensure you are receiving key nutrients needed even before you may know you are pregnant. For example, adequate folic acid is vital to help prevent neural tube defects (abnormalities of the brain and spine) in your baby, but the neural tube is already formed by day 28, even before many women know they are pregnant.

A postnatal multivitamin supplement should be taken by women following childbirth during breastfeeding to support the enhanced nutrient needs of a nursing mother and her baby.

**How Much Folate/Folic Acid Do I Need During Pregnancy and Breastfeeding?**

We must first understand the two different forms: folate vs. folic acid. Also known as vitamin B9, folate is the natural food form found particularly in leafy-green vegetables and legumes. Folic acid is the synthetic form used to fortify foods and found in supplements. In order to help individuals (particularly women of childbearing age) consume adequate folic acid, foods like breakfast cereal, bread, pasta and rice have been fortified with folic acid throughout the United States food supply since 1996. Both forms may be consumed to meet the overall dietary requirement.

The Institute of Medicine (IOM) Food and Nutrition Board (FNB) recommends the following Recommended Dietary Allowances (RDAs):

- **Women of childbearing age** should consume 400 mcg per day of synthetic folic acid in addition to food folate they receive from a varied diet.
- **Pregnant women** should consume 600 mcg per day (to include 400 mcg of synthetic folic acid). 
- **Lactating women** should consume 500 mcg per day total of folate or folic acid.

Folic acid can reduce the risk of neural tube defects if taken prior to conception through the sixth week of pregnancy, and possibly reduces other birth defects if taken later in pregnancy.
How Much Iron Do I Need During Pregnancy and Breastfeeding?
The iron in red blood cells helps carry oxygen to organs, tissues and baby. Women’s iron needs during pregnancy substantially increase to support their increased blood volume, as well as the healthy growth of their baby.9

The RDA recommendation for iron intake during pregnancy is 27 milligrams (mg) per day and during breastfeeding is 9-10 mg (varies based on age).10 Low maternal iron status during pregnancy has been associated with increased risk of low birth weight, preterm delivery and other adverse outcomes.7

What is DHA and How Much Do I Need During Pregnancy and Breastfeeding?
Docosahexaenoic acid (DHA) is an essential long-chain omega-3 polyunsaturated fatty acid mainly supplied to the diet from marine-based sources such as salmon, tuna and sardines. DHA is crucial because research demonstrates that it helps support the healthy growth and development of your baby’s brain, eyes and nervous system.3,11 It has been suggested that women should consume a minimum of 200 mg of DHA daily while pregnant and breastfeeding.3,11

After birth during the postnatal period, DHA remains important to baby’s development. Breastfeeding mothers should be aware that breast milk is not naturally high in DHA, therefore it is critical to ensure adequate DHA in your diet or through supplementation while breastfeeding.

While fatty fish are the best dietary sources of omega-3 fatty acids, women of child-bearing age and pregnant women are advised to avoid certain fish that may have a high content of methylmercury- a compound that can negatively affect the development of the baby’s nervous system.12 Therefore a prudent option is to supplement your diet with a prenatal and postnatal multivitamin that contains omega-3 fatty acids.

How Are Prenatal and Postnatal Vitamins Regulated?
The dietary supplement industry is regulated by the Food and Drug Administration (FDA) and the Federal Trade Commission (FTC), as well as by government agencies in each of the 50 states.

Check with Healthcare Professional
It is always advisable to consult your primary healthcare professional regarding the use of dietary supplements, especially during pregnancy and lactation, as it is important to understand dosing and any potential interactions with medications.

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A HEALTHY MOOD WITH SAM-E

Studies of SAM-e Supplementation Demonstrate Support of a Healthy Mood

SAM-e (S-adenosyl-L-methionine) supplements are effective in helping restore a healthy mood, as documented in a number of studies involving adults.

What is SAM-e?
SAM-e is a key compound found in every cell in the body and is essential to many processes. In the brain, SAM-e helps maintain the membrane coating of your nerve cells and has a role in the production of chemicals your nerve cells use to communicate, including the conversion of norepinephrine into epinephrine and of serotonin into melatonin.¹ Scientists have found that norepinephrine and serotonin are involved in regulating mood, but they are unsure of the exact ways in which they work.

Why may SAM-e be Beneficial?
Age, illness and nutritional status can affect the amount of SAM-e your body makes. This is one reason why SAM-e supplements may be helpful in replenishing the necessary supply your body needs to help maintain or restore health, including your mood.

Of note, your liver’s health can also impact SAM-e production. In patients with fatty liver disease from alcoholism, hepatitis infection, obesity or diabetes, SAM-e production is compromised. The use of SAM-e supplements in such patients should be taken in consultation with their physicians.

SAM-e is:
- Fast-acting: working in as little as 7 to 14 days
- Not known to have significant side effects
- Not known to interact with medications

Dosage:
- A good starting dose is 400 mg daily for 7 to 10 days
- If desired results are not experienced, increase to 800 mg daily for the next 7 to 10 days, and then to 1,200 mg daily if still not experiencing the desired results.

Who Should Take SAM-e?
- People who want to restore a healthy mood

Who Should Not Take SAM-e without Consulting a Healthcare Professional First?
- Although generally considered as safe, SAM-e has not been evaluated in children or pregnant or lactating women.
- Use in people with bipolar (manic) depression or having suicidal thoughts should not be considered without first consulting with a healthcare professional. This recommendation is based on an 11 patient study reporting patients experiencing elevated mood, including mania or euphoria with SAM-e and a case report of a single adult woman with severe depression before taking SAM-e who attempted suicide.⁴ ⁵
SAM-e Safety
The AHRQ report said that “the side effects of SAM-e seem relatively minor.” Mild side effects that have been reported from SAM-e trials in adults include: mild insomnia, lack of appetite, constipation, nausea, dry mouth, sweating, dizziness, heart palpitations and anxiety/nervousness. These effects similarly occurred among patients in the same studies who had received placebos, and less than in those who had received prescription medications.

How are SAM-e Supplements Made?
SAM-e supplements are made in a process that converts methionine to SAM-e, which is then purified into tablets. Because SAM-e tablets are absorbed in the small intestine, the tablets should have an enteric coating to support optimal absorption.

How are SAM-e Supplements Regulated?
The dietary supplement industry is regulated by the U.S. Food and Drug Administration and the Federal Trade Commission, as well as by government agencies in each of the 50 states.

Check with Your Healthcare Professional
It is always advisable for you to consult your health care professional regarding the use of dietary supplements, as it is important to understand dosing and any potential interactions with other medications.

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REFERENCES
CALCIUM

Essential for Good Health

Calcium Basics
Calcium is the most abundant mineral in the body and is integral in processes such as vascular and muscle function, nerve transmission, cellular signaling and hormonal secretion. However, only about 1% of the body’s calcium stores are used for these important functions. The remaining 99% of the body’s calcium is stored in bones and teeth to help maintain their structural support and strength and to provide reserves to maintain levels in the blood, muscles and intracellular fluid. Within the body, vitamin D aids in calcium absorption in the intestines. In addition, there are other key nutrients that play a role in overall bone metabolism, including magnesium, vitamin K and phosphorus.

Dietary Calcium Recommendations
Until 2010, the Food and Nutrition Board did not have adequate information for a Recommended Dietary Allowance (RDA) for calcium. However, in 2010, new guidance and dietary recommendations were published for calcium and vitamin D. The body of scientific literature for both nutrients was reassessed and RDA values were determined, rather than the Adequate Intake (AI) values, which were previously in place.

The table below outlines the Recommended Dietary Allowance for calcium:

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Pregnant or Lactating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 years</td>
<td>700 mg</td>
<td>700 mg</td>
<td></td>
</tr>
<tr>
<td>4-8 years</td>
<td>1,000 mg</td>
<td>1,000 mg</td>
<td></td>
</tr>
<tr>
<td>9-13 years</td>
<td>1,300 mg</td>
<td>1,300 mg</td>
<td></td>
</tr>
<tr>
<td>14-18 years</td>
<td>1,300 mg</td>
<td>1,300 mg</td>
<td>1,300 mg</td>
</tr>
<tr>
<td>19-50 years</td>
<td>1,000 mg</td>
<td>1,000 mg</td>
<td>1,000 mg</td>
</tr>
<tr>
<td>51-70 years</td>
<td>1,000 mg</td>
<td>1,200 mg</td>
<td></td>
</tr>
<tr>
<td>71+ years</td>
<td>1,200 mg</td>
<td>1,200 mg</td>
<td></td>
</tr>
</tbody>
</table>

Food Sources of Calcium

<table>
<thead>
<tr>
<th>Food</th>
<th>Serving Size</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yogurt, plain, low-fat</td>
<td>1 cup</td>
<td>415</td>
</tr>
<tr>
<td>Sardines with bones</td>
<td>1 can (3.75 oz)</td>
<td>351</td>
</tr>
<tr>
<td>Cheddar cheese</td>
<td>1 oz.</td>
<td>204</td>
</tr>
<tr>
<td>Milk (fat-free, 1% or 2%)</td>
<td>1 cup</td>
<td>314-350</td>
</tr>
<tr>
<td>Mozzarella cheese, whole milk</td>
<td>1 oz.</td>
<td>143</td>
</tr>
<tr>
<td>Orange juice, fortified</td>
<td>1 cup</td>
<td>349</td>
</tr>
<tr>
<td>Spinach, cooked</td>
<td>1 cup</td>
<td>245</td>
</tr>
</tbody>
</table>
Are You at Risk for Inadequate Calcium Intake?
Inadequate calcium intake is prevalent within the entire population. In fact, population data shows that approximately 64% of those ages one year and older did not consume adequate calcium.5

You may be at particular risk if you:
* Are a man or woman who does not consume calcium-rich foods
* Are a woman
* Are post-menopausal
* Are lactose intolerant
* Avoid dairy products
* Follow a calorie restricted diet
* Are older than 70 years of age
* Have had weight loss surgery or a malabsorption disorder

Does Calcium Supplementation Affect the Risk of Heart Attacks?
The current evidence suggesting that calcium supplementation increases heart attacks is too weak to justify a change in prescribing habits.6 In fact, there is ample evidence to support that appropriate calcium supplementation regimens are safe and have no negative effects on heart health. This evidence includes:

• A systematic review concluded calcium supplements have minimal cardiovascular effects and that vitamin D at moderate to high doses alone or in combination with calcium may reduce cardiovascular risk.7

• Calcium supplementation at 1200 mg/day did not significantly increase the risk of atherosclerotic vascular disease in elderly women. Further analysis suggests that calcium supplementation may reduce the risk of hospitalization and mortality in patients with preexisting atherosclerotic cardiovascular disease.8

So What Should Healthcare Professionals Do?
Work with your patients to understand their calcium need, and encourage them to consume calcium-rich foods, such as low-fat dairy products regularly. For those who are still unable to meet their needs, discuss the potential to use calcium supplements as a safe and effective way to incorporate additional calcium into their diet.

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REFERENCES


Vitamin D: The Popular Vitamin

Vitamin D is popular these days. That is because research has demonstrated that this fat-soluble vitamin is an essential nutrient for overall health. Our skin has the unique ability to make vitamin D, but since it is advisable to limit sun exposure, our bodies may not be making adequate amounts for optimal health. Additionally, few foods naturally contain vitamin D, and fortified foods contain minimal amounts of this nutrient. Therefore, many Americans are not receiving enough vitamin D. Furthermore, the increased prevalence of overweight and obesity has also contributed to our nation’s poor vitamin D status. Consequently, approximately one third of the US population, including children, adolescents, adults, and the elderly, are suffering from either insufficient or deficient levels of vitamin D. A vitamin D supplement is an inexpensive, safe and effective way to ensure you are receiving adequate amounts of this crucial micronutrient.

Why is Vitamin D Important?

- Vitamin D helps build and maintain strong bones by enhancing calcium absorption, regulating concentrations of calcium and phosphorus in the body, and regulating osteoclast (bone-resorbing cell) and osteoblast (bone-building cell) actions involved in bone remodeling. Vitamin D is mandatory for prevention of rickets and osteomalacia, and along with calcium, is associated with higher bone mineral density, lower osteoporosis risk, and reduction in fracture and fall risk.
- Vitamin D is important for muscle health because it supports muscle function, muscle strength, and balance.
- Vitamin D supports immune health by playing a crucial role in both acquired and innate immune responses.
- Other extraskeletal roles currently under investigation suggest vitamin D’s role in the body to be virtually ubiquitous.

Food Sources of Vitamin D

Few foods naturally contain vitamin D; these include some fatty fish (e.g. salmon, mackerel, sardines), fish liver oils, eggs, and UV-irradiated mushrooms. To prevent rickets, the US began fortifying our dairy and cereal with vitamin D in the early 20th century. Unfortunately, you have to consume large amounts of these natural or fortified sources to meet your vitamin D needs. For example, it would take up to 20 glasses of milk per day to raise vitamin D blood levels to recommended levels.

<table>
<thead>
<tr>
<th>Food Source</th>
<th>Amount Per Serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fortified milk</td>
<td>100 IU per cup</td>
</tr>
<tr>
<td>Fortified orange juice</td>
<td>100 IU per cup</td>
</tr>
<tr>
<td>Fortified cereal</td>
<td>133 IU per cup</td>
</tr>
<tr>
<td>Cooked wild salmon</td>
<td>847 IU per 3 oz</td>
</tr>
<tr>
<td>Cooked farmed salmon</td>
<td>206 IU per 3 oz</td>
</tr>
<tr>
<td>Egg</td>
<td>41 IU per 1 whole egg</td>
</tr>
</tbody>
</table>

Useful Vitamin D Conversions:
- 40 IU = 1 mcg
- 1 ng/ml = 2.5 nmol/L

Did You Know That There are Two Types of Vitamin D?

Vitamin D is available in two forms: vitamin D$_2$ (plant-derived) and vitamin D$_3$ (animal-derived). Vitamin D$_3$ is the preferred form because it is more effective at raising and maintaining serum vitamin D levels in your body. Vitamin D$_3$ is the form most commonly found in nutritional supplements; the vitamin D prescription form in the US is D$_2$. 
How Much is Right for Me?

- 600 IU/day: Current Recommended Daily Allowance (RDA) for ages 1-70 years
- 800 IU/day: Current RDA for adults over 70 years
- 1,000 - 5,000 IU/day of vitamin D, is a commonly recommended dose range for adults by health care professionals. Although individual differences and one’s baseline status affect response, these doses have been demonstrated via research to raise serum vitamin D levels into the healthy range (> 20 ng/ml or > 30 ng/ml): 13, 14
- 100 IU/day raises serum vitamin D levels by approximately 1 ng/ml
- For example, if your serum vitamin D level is 10 ng/ml (deficiency) at baseline, taking 2,000 IU/day would theoretically raise your serum vitamin D level by 20 ng/ml to approximately 30 ng/ml (sufficiency).
- > 5,000-10,000 IU/day is often recommended by health care professionals if you have been identified as having low levels of serum vitamin D.

Are You at Risk for Vitamin D Insufficiency?
You may be at risk if you:
- Do not take a daily vitamin D supplement or consume dairy products
- Are an older adult
- Are overweight or obese
- Limit sun exposure or wear sunscreen
- Have darker skin
- Are restricted to indoor activity
- Live at a higher latitude or in a region with a long winter season
- Live in a region with air pollution
- Have a malabsorption syndrome, liver disease, or renal disease
- Take certain medications

Your doctor can arrange for a simple serum 25-hydroxyvitamin D blood test to determine your vitamin D status. Be proactive with your health and consider taking a daily vitamin D supplement as part of a healthy supplement regimen.

ABOUT PHARMAVITE LLC
For more than 40 years, Pharmavite has been a trusted leader in the wellness industry, recognized for providing high-quality vitamin, mineral and herbal supplements and all-natural foods under its Nature Made® and SOYJOY® brand names. Nature Made is the number one selling national vitamin and supplement brand in traditional retail scanning outlets. SOYJOY is an all-natural, delicious baked bar made with real fruit and ground whole soybeans.

The dietary supplement industry is regulated by the U.S. Food and Drug Administration and the Federal Trade Commission, as well as by government agencies in each of the 50 states.

REFERENCES

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