

Nutrition Action

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MULTI-TASKING

Multivitamins: insurance...
or waste of money?

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Weight &
Cancer

MULTI-TASKING

Multivitamins: insurance...or waste of money?

BY DAVID SCHARDT

“Enough is enough: Stop wasting money on vitamin and mineral supplements,” [wrote](#) Johns Hopkins University researchers in the *Annals of Internal Medicine* in 2013. Worse yet, could multivitamins cause harm?

Not so fast, countered the Cleveland Clinic, which [calls](#) multivitamins “insurance against an imperfect diet.” Who’s right?

When Paul runs out of his multi, “I immediately feel the difference in my body, I feel more fatigued and less alert,” he commented on amazon.com.

Patricia’s doctor said that multivitamins “are a total waste of money,” she told fellow Amazon customers. “Trash can—here they come!”

Richard’s advice: “The more expensive the multi is, the better the product.”

Everyone’s an expert when it comes to vitamins. So we talked to an actual expert.

“Multivitamins can provide a safety net for people who are eating reasonably well but might not be sure they’re getting all the recommended levels of the essential vitamins and minerals,” says Howard Sesso, who helped run the Physicians’ Health Study II, the longest, largest clinical trial of multivitamins in men.

For example, many Americans get too little vitamin D from food or exposure to sunlight. Many multivitamins now supply the recommended levels (600 IU until age 70 and 800 IU if you’re older).

Multivitamins may matter more as people get older, notes Sesso, an associate professor of epidemiology at the Harvard T.H. Chan School of Public Health.

“Our calorie needs tend to decrease as we enter our 60s and 70s,” he explains. “Our appetite is not the same as it was, we eat less, and we may not be getting the essential nutrients we need.”

And age may make it harder to absorb some vitamins and minerals from food.

“That’s why, for example, vitamin B-12 deficiency is of concern among older adults,” says Sesso. After age 50, some people secrete less stomach acid, so they absorb less B-12 from their food (though

they have no trouble absorbing the B-12 in supplements or fortified foods). And a prolonged B-12 deficiency leads to irreversible nerve damage that can masquerade as dementia.

Most Americans aren’t in danger of a vitamin or mineral deficiency, says Sesso, but few people know whether they’re near that point.

“For a lot of people, multivitamins add an extra layer of security to ensure they’re getting at least minimum levels of essential vitamins and minerals to avoid nutritional deficiency or insufficiency.”

Can a multi also prevent disease? That remains an open question.

Lower Cancer Risk?

In the Physicians’ Health Study II, Sesso and his colleagues randomly assigned more than 14,000 men aged 50 and older to take a daily Centrum Silver (one of the most popular basic multivitamin-and-minerals for seniors) or a placebo.

After 11 years, the multi takers had an 8 percent lower risk of being diagnosed with cancer (and a 9 percent lower risk of cataracts) than the placebo takers.^{1,2}

“And among men who had a history of cancer at the start of the trial, results suggested that the multivitamin was even stronger in preventing new cancers,” adds Sesso.

The multi takers were just as likely to have heart attacks or strokes, to suffer memory loss or other cognitive decline, or to die during the study.^{3,4}

(Centrum had no role in conducting the study or interpreting the results.)

But questions remain. “We don’t know whether the lower cancer risk found in men extends to women, or whether taking a multivitamin has stronger benefits in those with a history of cancer,” says Sesso.

COSMOS, a new clinical trial on women aged 65 or older and men aged 60 or older, should provide some answers by 2020. (Interested in participating? Visit www.cosmostrial.org or call 800-633-6913.)



A multi can be a good safety net (though One A Day’s ad exaggerates when it implies that 90 percent of us need one). Can a multi also prevent disease? The jury is still out.

What Your MULTI Should Contain

Vitamin A	2,500-5,000 IU <i>(including any % as beta-carotene)</i>
Vitamin C	60-1,000 mg
Vitamin D	600-2,000 IU
Vitamin E	20-100 IU
Vitamin K	20 mcg <i>or more</i>
Thiamin (B-1)	1.2 mg <i>or more</i>
Riboflavin (B-2)	1.3 mg <i>or more</i>
Niacin (B-3)	16-35 mg
Vitamin B-6	1.7-100 mg
Vitamin B-12	2.4 mcg <i>or more</i>
Folic Acid	
Premenopausal women	400 mcg
Everyone else	200-400 mcg
Calcium	
Men	No more than 250 mg
Women	No more than 500 mg
Iron	
Premenopausal women	18 mg
Everyone else	No more than 10 mg
Magnesium	50-350 mg
Zinc	11-30 mg
Copper	0.5-10 mg
Selenium	19-110 mcg
Chromium	35 mcg <i>or more</i>
Potassium	Don't rely on a multi

Note: "Or more" doesn't mean that a nutrient is safe at any dose, but that levels in multivitamins are unlikely to be high enough to cause harm.

The Bottom Line

- It's worth taking a multivitamin if it supplies nutrients—like vitamins D and B-12—that you may not get enough of from food.
- Don't count on a multi to "support" your heart, brain, or anything else.
- You don't need to pay more than \$5 a month for a high-quality multivitamin-and-mineral.

- ¹ *JAMA* 308: 1871, 2012.
- ² *Ophthalmology* 121: 525, 2014.
- ³ *JAMA* 308: 1751, 2012.
- ⁴ *Ann. Intern. Med.* 159: 806, 2013.
- ⁵ *Br. J. Cancer* 110: 249, 2014.
- ⁶ *Fertil. Steril.* 89: 668, 2008.
- ⁷ *Arch. Intern. Med.* 171: 1625, 2011.
- ⁸ *Am. J. Epidemiol.* 173: 906, 2011.
- ⁹ *Am. J. Clin. Nutr.* 97: 437, 2013.

The Best-Multis List

Here's a selection of multivitamin-and-mineral supplements from some major brands that meet our criteria, plus a few that just miss for reasons that don't matter (see footnotes). If yours isn't on the list, keep in mind that we didn't look at every multi. You can check any label against our "What Your Multi Should Contain" list.

Premenopausal Women *(enough iron and folic acid)*

Centrum Adults
CVS Spectravite Adult¹
Nature Made Multi Complete Tablets
Walgreens Adults¹
Walmart Equate Complete Adults Under 50¹

¹ Contains 400 IU of vitamin D.

Postmenopausal Women Only *(too much calcium for men)*

Centrum Silver Women 50+^{1,2}
CVS One Daily Women's 50+ Advanced
CVS Spectravite Ultra Women 50+^{1,2}
One A Day Women's 50+ Healthy Advantage
Target Up & Up Women's 50+^{1,2}
Walgreens One Daily Women's 50+
Walgreens Women 50+^{1,2}
Walmart Equate Complete Women 50+^{1,2}
Walmart Equate One Daily Women's 50+

¹ Contains 8 mg of iron (other multis in the list have no iron).
² Contains 1.1 mg of thiamin and riboflavin and 14 mg of niacin.

Men or Postmenopausal Women

Centrum Men¹
Centrum Silver Adults 50+
Centrum Silver Men 50+
CVS One Daily Men's Health Formula
CVS Spectravite Adult 50+ Tablets²
CVS Spectravite Ultra Men¹
CVS Spectravite Ultra Men 50+
Nature Made Multi for Her 50+ Softgels or Tablets
Nature Made Multi for Him Tablets
Nature Made Multi for Him 50+ Tablets
One A Day Men's 50+ Healthy Advantage³
One A Day Men's Health Formula
One A Day Men's Pro Edge
Target Up & Up Men's Daily
Walgreens Adults 50+²
Walgreens Men¹
Walgreens Men 50+
Walgreens One Daily Men's
Walmart Equate Complete Adults 50+²
Walmart Equate Complete Men 50+
Walmart Equate One Daily Men's 50+³
Walmart Equate One Daily Men's Health

¹ Contains 8 mg of iron (other multis in the list have no iron).
² Contains 500 IU of vitamin D.
³ Contains 117 mcg of selenium.

Until then, says Sesso, "we hope to fill in some of these research gaps with observational studies."

Unlike a clinical trial, observational studies look at the risk of disease among people who do or don't choose to take a multi on their own.

For example, the Nurses' Health Study II has tracked more than 43,000 women since 1989. Those who took multivitamins were less likely to have precancerous colon polyps and less likely to be infertile because of ovulation problems.^{5,6}

"The challenge in looking at observational studies is that people who take multivitamins differ from those who don't," says Sesso. "While observational studies try their best to account for the differences—like smoking and exercise—they can't adjust for differences they don't know about."

Then there's the question of what people take. "We don't know if all multivitamin formulations have similar effects, or whether particular combinations of vitamins and minerals are better than others," says Sesso.

A 2011 observational study of Iowa women rattled some people when it found that multi takers were slightly more likely to die than non-multi takers.⁷

But the result appears to be a fluke. Other observational studies and clinical trials don't find a higher risk of dying among those taking a multi.^{8,9}

"There doesn't appear to be any harm from taking ordinary big-brand multivitamins," says Sesso. "But whether they can prevent disease remains a work in progress."

Skip the specialized formulations that add herbs or other botanicals, says Sesso.

"We don't really know how these ingredients interact and what their long-term effects are."

Gummies & Chewables Fall Short



The best chewable we found.

An estimated 2,500 Americans end up in hospital emergency rooms each year because of trouble swallowing supplements, usually vitamins and minerals. Nearly half are adults 65 and older.

That's one reason why multivitamin gummies, chewables, mints, and liquids are flying off shelves. Another is obvious: they taste like candy.

Too bad these easier-to-swallow alternatives don't measure up to ordinary multivitamins. Many contain far less than recommended levels of vitamins and minerals, and some

are missing key nutrients like zinc, magnesium, and chromium.

Of the 40+ products we looked at, only two came reasonably close to the supplements in our Best-Multis List: Centrum Silver Chewables Adults 50+ (it was missing vitamin K) and its knockoff CVS Spectravite Adult 50+ Chewable Tablets.

Gummies fared the worst. Most were missing at least five nutrients that a "Best Multi" should contain.



A Cure for Everything?

Some multivitamin companies—Centrum isn't the only one—claim that their supplements can take care of just about everything that might be bothering you: heart, eyes, muscles, energy level, even how you look. Time for a reality check.



IMMUNITY. "Antioxidants support normal immune function."

In three clinical trials with a total of roughly 2,150 middle-aged and older men and women, multivitamin takers were just as likely to get sick—or stay sick for just as long—as placebo takers.¹⁻³

¹ *J. Am. Geriatr. Soc.* 55: 35, 2007.

² *BMJ* 331: 324, 2005.

³ *JAMA* 288: 715, 2002.



MUSCLE FUNCTION. "Magnesium, Vitamin D and B6 support muscle function."

The jury is still out over whether magnesium or vitamin D supplements help with muscles, but there's no good evidence that vitamin B-6 does.



HEALTHY APPEARANCE. "Biotin, beta-carotene, vitamins A, C and E help maintain healthy appearance."

Unless you're suffering from a rare, life-threatening nutrient deficiency like scurvy, there's no good evidence that a multi will help with your skin or hair.



HEART HEALTH. "B-vitamins help promote heart health."

A dozen good clinical trials have shown that B vitamins don't reduce the risk of heart attacks or strokes.¹

¹ *Cochrane Database Syst. Rev.* 1: CD006612, 2013.



EYE HEALTH. "Vitamins A, C, and E and Lutein support healthy eyes."

There's decent evidence for this one. Male physicians who took a multivitamin (Centrum Silver) every day for 11 years had a 9 percent lower risk of cataracts than those who took a placebo.¹

¹ *Ophthalmology* 121: 525, 2014.



ENERGY. "B-vitamins and iron support daily energy needs."

B vitamins won't make you feel more energetic. Iron helps combat fatigue only if you suffer from anemia caused by an iron deficiency.

HOW TO Multivitamin

This made-up multivitamin label shows how much of each vitamin and mineral we should aim for every day (from foods and supplements combined), according to the current Daily Values (DVs) set by the Food and Drug Administration. The DVs are based

VITAMIN A. Most multivitamins contain some mix of retinol (vitamin A) and beta-carotene (which our bodies convert to retinol). The DV is dropping from 5,000 IU to 3,000 IU, but labels will list the new DV as 900 micrograms RAE (Retinol Alpha Equivalents). More than 10,000 IU (3,000 mcg RAE) a day of retinol from supplements can cause birth defects if taken by pregnant women. High doses of beta-carotene (25,000 to 50,000 IU a day) raise the risk of lung cancer in smokers and, possibly, former smokers.

VITAMIN D. The DV is doubling, from 400 IU to 800 IU (20 mcg). Our bodies make vitamin D from sunlight, and it's added to milk, some breakfast cereals, and some yogurts. A large trial is testing whether vitamin D helps prevent cancer, heart disease, stroke, diabetes, memory loss, depression, and more. Taking more than 4,000 IU (100 mcg) a day may lead to dangerously high blood levels of calcium.

THIAMIN (B-1), RIBOFLAVIN (B-2), NIACIN (B-3), B-6. The DVs for these B vitamins are dropping slightly. Way-above-the-DV doses are useless but safe. Exceptions: 50 milligrams of niacin can cause flushing of the skin and more than 100 mg of B-6 can cause (reversible) nerve damage and skin lesions.

VITAMIN B-12. The DV is dropping from 6 micrograms to 2.4 mcg. Adults over 50 should get most of their 2.4 mcg from a supplement or fortified food because they may not make enough stomach acid to digest and absorb B-12 from meats, eggs, and dairy foods. Ditto for vegans (who eat no animal foods). A B-12 deficiency can cause anemia and irreversible nerve damage that can masquerade as dementia.

BIOTIN, PANTOTHENIC ACID. Superfluous. We get plenty from our food.

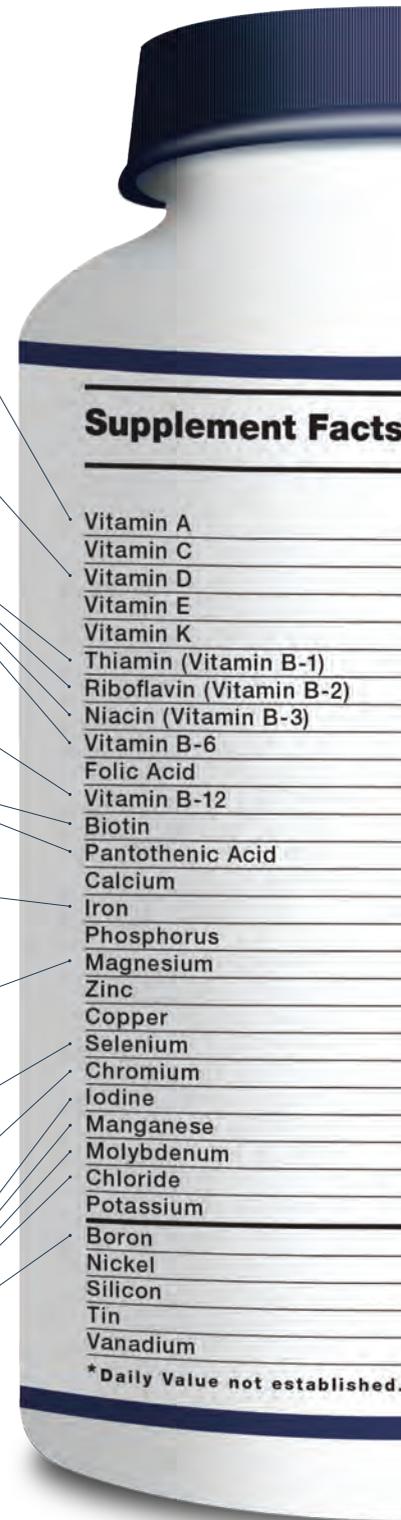
IRON. Premenopausal women, who lose iron through menstruation, should get the DV (18 milligrams). Most men and postmenopausal women don't need more than 10 mg from a multi. More isn't better, because there's no easy way to know if you have genes that lead your body to store excess iron (hemochromatosis), which may raise your risk of cirrhosis, liver cancer, diabetes, or an irregular heartbeat.

MAGNESIUM. The DV is increasing from 400 milligrams to 420 mg. About half of all Americans get less magnesium than recommended, which may raise their risk of diabetes. Leafy greens, beans, whole grains, and nuts are the best sources. Few multis have more than 100 mg. More than 350 mg from supplements (but not foods) can cause diarrhea and stomach cramps.

SELENIUM. The DV is dropping from 70 micrograms to 55 mcg. Americans average about 100 mcg from their food. Whether selenium supplements increase the risk of type 2 diabetes and prostate cancer is still unclear, so stick to a multi with no more than about 100 mcg.

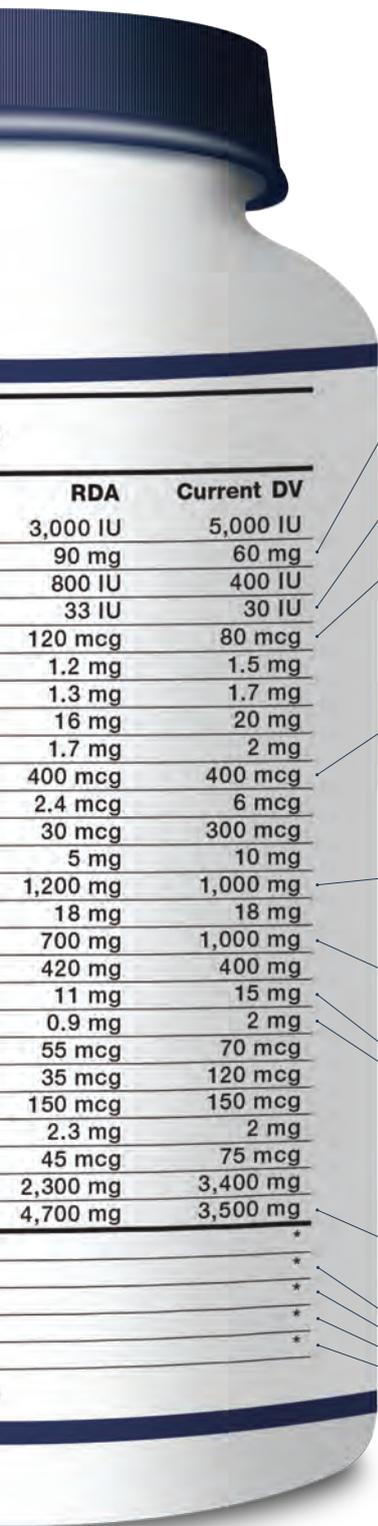
CHROMIUM. The DV is dropping from 120 micrograms to 35 mcg. If you have type 2 diabetes, don't expect chromium to lower your blood sugar.

IODINE, MANGANESE, MOLYBDENUM, CHLORIDE, BORON. The Centers for Disease Control and Prevention warns that many women in their 20s and 30s may not be getting enough iodine, which the developing brain needs during pregnancy. Dairy foods and seafood are good sources. We get plenty of the other minerals from our food.



READ A min Label

on the National Academy of Medicine's Recommended Dietary Allowances (RDAs), which vary slightly by age and sex. The FDA recently updated the DVs, but labels don't have to use the new DVs until July 2018.



RDA	Current DV
3,000 IU	5,000 IU
90 mg	60 mg
800 IU	400 IU
33 IU	30 IU
120 mcg	80 mcg
1.2 mg	1.5 mg
1.3 mg	1.7 mg
16 mg	20 mg
1.7 mg	2 mg
400 mcg	400 mcg
2.4 mcg	6 mcg
30 mcg	300 mcg
5 mg	10 mg
1,200 mg	1,000 mg
18 mg	18 mg
700 mg	1,000 mg
420 mg	400 mg
11 mg	15 mg
0.9 mg	2 mg
55 mcg	70 mcg
35 mcg	120 mcg
150 mcg	150 mcg
2.3 mg	2 mg
45 mcg	75 mcg
2,300 mg	3,400 mg
4,700 mg	3,500 mg

VITAMIN C. The DV is rising from 60 milligrams to 90 mg. Many Americans get too little vitamin C from their food. Smokers need 125 mg a day. To play it safe, people who are regularly exposed to secondhand smoke should also get 125 mg. Taking more than 1,000 mg at one time can cause diarrhea.

VITAMIN E. The DV is dropping from 30 IU to 15 mg, which is equal to 22.5 IU. High doses of vitamin E may not be safe. In a large trial, men who took 400 IU a day for 5½ years had a 17 percent higher risk of prostate cancer. To play it safe, look for a multi with no more than 100 IU. Good food sources include nuts, oils, whole grains, and leafy greens.

VITAMIN K. The DV is jumping from 80 micrograms to 120 mcg. Most multivitamins have less because vitamin K can interfere with blood-thinning drugs like warfarin (Coumadin). If you're taking a blood thinner, check with your doctor before you start (or stop) taking a multivitamin with vitamin K. Leafy greens are the best food source.

FOLIC ACID. The new DV is 400 micrograms DFE (Dietary Folate Equivalent), but supplements will also list the old units (micrograms, or mcg). The DFE adjusts the levels to account for our ability to absorb the *folic acid* that is added to supplements or fortified foods better than the *folate* that occurs naturally in foods. Women who could become pregnant should take a supplement with 400 mcg of folic acid (ignore how many mcg DFE it has) to reduce the risk of birth defects like spina bifida, which can occur before a woman knows that she is pregnant.

CALCIUM. The DV is rising from 1,000 milligrams to 1,300 mg. That's based on what children aged 9 to 18 need. Premenopausal women and men up to age 70 need 1,000 mg. Postmenopausal women and men over 70 need 1,200 mg. Most multivitamins have 200 to 500 mg. That may be enough to get you to the DV, since each serving of milk, yogurt, cheese, or fortified foods has 150 to 300 mg, and most people get 250 mg from the rest of their diet. Taking a daily supplement with 1,000 mg or more may raise the risk of kidney stones and hip fractures. Taking 2,000 mg or more may raise the risk of prostate cancer.

PHOSPHORUS. The DV is 1,000 milligrams. Most people get plenty of phosphorus, because it occurs naturally in meat, poultry, grains, and dairy, and companies add phosphates and phosphoric acid to many processed foods. Too much phosphorus may raise the risk of heart and kidney disease. Look for a multi with little or none.

ZINC, COPPER. The DV for zinc is dropping from 15 milligrams to 11 mg, and the DV for copper is dropping from 2 mg to 0.9 mg. Too much zinc (more than 40 mg from food and supplements combined) can make it harder to absorb copper.

POTASSIUM. The DV is increasing from 3,500 milligrams to 4,700 mg, which few people get. Potassium can help lower blood pressure, but a typical multi has less than 100 mg. And the kind of potassium in most supplements—potassium chloride—won't help prevent kidney stones and bone loss like the potassium citrate in fruits and vegetables. Banana, anyone?

NICKEL, SILICON, TIN, VANADIUM. Don't worry. It's not even certain that we need them. 🍌