



Multivitamins

CAUTION: Multivitamins should not be confused with [Prenatal vitamins](#).

[Other Common Names](#)

- Multiples, Multis, Multivitamin, Multivitamin-multimineral supplements, MVIs, MVMs, MVMM, Suppléments Multivitaminiques et Multiminéraux, Vitamines Multiples.

Overview

Multivitamins are supplements that contain numerous vitamins, minerals, and other ingredients. The ingredients in multivitamins vary in type and quantity. While there is no standard or regulatory definition for multivitamins in the US, supplements are often considered to be "multivitamins" if they contain three or more vitamins and/or minerals ([95864](#)).

Safety

LIKELY SAFE ...when used orally and appropriately. Multivitamins have been used in clinical trials lasting up to 10 years with no serious adverse events reported ([95844,95845,95854](#)). While a high-quality assessment of the safety of multivitamins has not been conducted, taking multivitamins that contain nutrients in amounts that do not exceed Dietary Reference Intakes (DRIs) should be safe for most people. Keep in mind that people consuming other sources of nutrients in addition to a multivitamin should use caution not to exceed tolerable upper intake levels (ULs) of these nutrients. Consuming nutrients in amounts above the ULs increases the risk of adverse effects ([95864](#)). See individual nutrient monographs for more information regarding the safety of specific nutrients contained in multivitamins.

PREGNANCY AND LACTATION: **LIKELY SAFE** ...when multivitamins specifically formulated for pregnancy or lactation are used orally and appropriately. A multivitamin containing nutrients in amounts that do not exceed Dietary Reference Intakes (DRIs) during pregnancy or lactation should be safe in this population. Keep in mind that people consuming other sources of nutrients in addition to a multivitamin should use caution not to exceed tolerable upper intake levels (ULs) of these nutrients. Consuming nutrients in amounts above the ULs increases the risk of adverse effects ([95864](#)). See the Prenatal Vitamins monograph for information about multivitamins specifically formulated for use during pregnancy.

Adverse Effects

General: Multivitamins are generally well tolerated. No adverse effects have been reported in clinical studies. However, many studies have not conducted thorough safety assessments. Multivitamins contain a wide variety of ingredients. See specific monographs for more detailed information about possible adverse effects.

- Gastrointestinal

Orally, a case of pharmacobezoar with resultant large bowel obstruction due to multivitamin consumption is reported in a 77-year-old patient with a history of chronic constipation and anatomic abnormality of the colon ([111624](#)).

Effectiveness

POSSIBLY EFFECTIVE

Age-related macular degeneration (AMD). In patients at high risk of developing advanced AMD, taking specific multivitamins may reduce loss of vision acuity and reduce the risk of disease progression.

Details: A meta-analysis of clinical research in patients at high risk of developing advanced AMD shows that taking a multivitamin supplement containing vitamin C 500 mg, vitamin E 400 units, and beta-carotene 15 mg daily, with or without zinc 80 mg, orally daily for up to 10 years reduces the risk of visual acuity loss by 23% to 27% and reduces the risk of progression to advanced AMD by 25% to 32% ([7303,7304,11326,95839,113088](#)). Although there is interest in using multivitamins to prevent disease progression in early stage AMD, this use has not been well studied ([7303,7304,90069](#)).

POSSIBLY INEFFECTIVE

Cardiovascular disease (CVD). Taking multivitamins does not appear to reduce the risk of primary or secondary CVD or cardiovascular events.

Details: Most available clinical and population research in patients without CVD shows that taking multivitamins orally daily for up to 19 years does not reduce the risk of developing CVD, including myocardial infarction (MI), stroke, cardiac death, or cardiac revascularization events when compared with control ([95851,95852,97308,97481](#)). However, one large population study in adults without CVD has found that regular use of a multivitamin for up to 12 years is associated with a 4% lower risk of CVD, including coronary heart disease, MI, and CVD-related mortality, when compared with no multivitamin use ([109686](#)). The US Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the primary prevention of CVD in the general population ([108641](#)).

A meta-analysis of clinical research in patients with existing CVD also shows that taking multivitamins orally daily for up to 8 years does not reduce the risk of cardiovascular events (secondary prevention) when compared with control ([97308,97481](#)). Similarly, a large clinical study in patients that recently had an MI shows that taking a high-dose, 28-ingredient multivitamin daily for 1-3 years does not reduce cardiovascular events such as MI, stroke, or cardiac death when compared with placebo ([95845](#)).

A large clinical study in older males with or without a history of CVD also shows that taking a specific multivitamin (Centrum Silver) orally daily for an average of 11 years does not reduce the risk of any cardiovascular outcomes when compared with placebo ([95853](#)). Another large randomized trial in adults at least 60 years of age with or without CVD

shows that taking a specific multivitamin (Centrum Silver, GSK) in addition to cocoa flavanol extract 500 mg orally daily for an average of 4 years does not prevent CVD when compared with placebo ([109684](#)). However, this study may have been inadequately powered to detect a difference between groups.

Overall mortality. Most clinical research shows that taking multivitamins does not prevent mortality in adults or children.

Details: A meta-analysis of 21 clinical studies in older adults shows that taking a multivitamin or multimineral supplement orally daily for an average of 43 months does not reduce mortality when compared with placebo ([95847](#)). Another meta-analysis of 10 clinical trials in healthy and unhealthy adults shows that taking multivitamins orally daily for 8 years is not associated with a reduced risk of all-cause mortality when compared with control ([97308](#)).

Multivitamins also do not seem to reduce mortality in children with severe anemia. An open-label clinical study in children 2-12 years of age with severe anemia (hemoglobin less than 6 g/dL) shows that taking a specific multivitamin supplement (Nutromix sprinkles, Hexagon Nutrition) with or without sulfamethoxazole/trimethoprim orally daily for 3 months does not affect mortality or re-hospitalization rates at 6 months when compared with taking folate and iron supplements alone ([102443](#)).

INSUFFICIENT RELIABLE EVIDENCE to RATE

Alzheimer disease. It is unclear if oral multivitamins are beneficial in patients with Alzheimer disease.

Details: Preliminary clinical research in adults being treated with donepezil for Alzheimer disease shows that taking a multivitamin containing folic acid, vitamin A 4000 units, riboflavin 2 mg, vitamin B6 5 mg, vitamin B12 500 mcg, folic acid 1 mg, vitamin C 100 mcg, vitamin D 400 units, and other minerals orally once daily for 26 weeks does not improve cognitive function or functional ability scores when compared with placebo ([95855](#)).

Breast cancer. It is unclear if oral multivitamins are beneficial for preventing breast cancer.

Details: A meta-analysis of population research has found that taking multivitamins orally once daily for up to 10 years is not associated with a reduced risk of developing breast cancer ([95836](#)). In addition, the US Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the prevention of any cancer ([108641](#)).

Cancer. It is unclear if oral multivitamins are beneficial for preventing or treating cancer.

Details: The US Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the prevention of cancer in general ([108641](#)). Most of the research conducted to date is low-quality, and overall it is unclear if multivitamin use decreases cancer risk, including lung, breast, colorectal, esophageal, or prostate cancer, or decreases cancer-related mortality after cancer diagnosis ([34607,95836,95837,95842,95848,108641,109683,109685,109932](#)).

A large population study in adults at least 50 years of age has found that taking a multivitamin orally daily for up to 16 years is associated with a 2% increase in the risk of being diagnosed with any cancer in males when compared with no multivitamin use. This association was not identified in females. This same study also found that high-dose multivitamin use is associated with a lower risk of certain cancers. However, the validity of this study is limited by confounders not measured or accounted for in the analysis ([109933](#)). In addition, a large randomized clinical trial in adults at least 60 years of age shows that taking a specific multivitamin (Centrum Silver, GSK), in addition to cocoa flavanol extract 500 mg, orally daily for an average of 4 years does not prevent invasive cancers when compared with placebo ([109684](#)). However, this study may have been inadequately powered to detect a difference between groups.

In adult cancer survivors, observational data suggests that multivitamin use is not associated with lower risk of all-

cause mortality. However, multivitamin use is associated with modestly lower risk of cancer-related mortality in survivors of breast or skin cancer, and lower risk of mortality due to cardiovascular disease in female survivors of reproductive cancers and male survivors of non-reproductive cancers ([113090](#)).

Canker sores. It is unclear if oral multivitamins are beneficial in patients with canker sores.

Details: Preliminary clinical research in patients with a history of canker sores shows that taking a multivitamin containing no more than the recommended daily intake of vitamins orally daily for 12 months does not reduce the occurrence or duration of canker sores when compared with placebo ([95844](#)).

Cataracts. It is unclear if oral multivitamins are beneficial for preventing cataracts.

Details: A meta-analysis of population and clinical research in generally healthy adults shows that taking a multivitamin orally daily for up to 19 years reduces the risk of cataracts, including nuclear or cortical cataracts, by 19% to 34% when compared with control ([95857](#)). However, multivitamins do not appear to reduce the rate of cataract surgery or occurrence of posterior subcapsular cataracts ([95857](#)).

Cognitive function. It is unclear if oral multivitamins are beneficial for improving cognitive function; research is conflicting.

Details: Two clinical studies in healthy older adults and young males show that taking a specific multivitamin (Swisse Ultivite 50+; Swisse Men's Ultivite Multivitamin Mineral and Antioxidant with Herbs Formula 1; Swisse Vitamins Pty Ltd.) orally daily for 16 weeks does not affect cognitive function, including memory and reaction time, when compared with placebo ([95849,95850](#)). However, a meta-analysis of randomized controlled trials in healthy, mostly older adults shows that taking multivitamins orally daily for at least 1-12 months modestly improves immediate memory recall, but not other cognitive measures, such as delayed memory recall and verbal fluency, when compared with placebo ([95840](#)).

Results of clinical studies testing similar multivitamin products are also conflicting. A large clinical study in males at least 65 years old shows that taking a specific multivitamin (Centrum Silver) orally daily for 12 years does not improve immediate memory, delayed memory, verbal fluency, or cognitive function when compared with placebo ([95841](#)). In contrast, a substudy of a more recent large clinical trial in otherwise healthy adults at least 60 years old shows that taking a specific multivitamin (Centrum Silver) daily modestly improves immediate recall at 1 and 3 years, but not memory retention or executive function, when compared with placebo ([111623](#)). Meta-analysis of this study and 2 additional sub studies also shows that taking a multivitamin daily for 2-3 years improves global cognition and episodic memory when compared with placebo ([111524,111622,111623](#)). However, it is unclear whether these improvements are clinically significant. In addition, one substudy suggests that taking a multivitamin daily for 3 years does not reduce the risk of developing mild cognitive impairment or probable dementia when compared with placebo ([111524,111621](#)).

The reasons for discrepant study findings are unclear but may be explained by differences in patient populations studied, duration of follow up, or multivitamin product ingredients. For example, the Centrum Silver product studied in more recent research contains lutein and lycopene, while the product tested in prior research does not ([95841,111622](#)).

Colorectal cancer. It is unclear if oral multivitamins are beneficial for preventing colorectal cancer.

Details: Some population research has found that taking a multivitamin orally daily for up to 20 years is associated with an 8% to 12% lower risk of colorectal cancer when compared with not taking a multivitamin ([95842,95848](#)). Other population research in adults diagnosed with colorectal cancer has found that regularly taking a multivitamin orally for up to 25 years is not associated with overall mortality or colorectal cancer-related mortality when compared with not using multivitamins ([109685](#)). In addition, the US Preventive Services Task Force (USPSTF)

concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the prevention of any cancer ([108641](#)).

Coronavirus disease 2019 (COVID-19). It is unclear if oral multivitamins are beneficial for treating COVID-19.

Details: A large clinical study in otherwise healthy outpatient adults under age 60 with COVID-19 or COVID-like illness shows that taking a multivitamin with minerals in addition to zinc 25 mg and melatonin 2 mg daily leads to symptom resolution in approximately 17% and 13% more patients at follow up day 5 and 10, respectively, but does not improve symptom resolution at day 15 or 30, when compared with placebo ([111625](#)). However, the duration of study treatment is unclear. It is also unclear if this effect is due to the multivitamin, zinc, melatonin, or the combination.

Dry eye. It is unclear if oral multivitamins are beneficial for patients with dry eye.

Details: A small clinical study in adults over age 45 with dry eye refractory to other treatment shows that taking a specific multivitamin (Greenwol soft cap, Kyungnam Pharm) containing B vitamins, vitamin C, vitamin E, beta-carotene, zinc oxide, selenium, and ubidecarenone twice daily, in addition to topical treatment, improves dry eye symptoms, tear secretion, and tear stability at the 3-month follow up when compared to baseline ([111626](#)). The validity of this study is limited by the lack of a comparator group and unclear duration of treatment.

Ebola virus disease. It is unclear if oral multivitamins are beneficial in patients with Ebola virus disease.

Details: In patients with Ebola virus disease in a resource-limited setting, a propensity score-matched analysis of an observational study has found that supplementation with different multivitamins orally daily for up to 16 days, starting within 48 hours of admission, is associated with a 19% reduction in inpatient mortality when compared with no supplementation. Preliminary subgroup analyses suggest that patients that received vitamin A and/or vitamin C with their multivitamins may have better outcomes ([105834](#)).

Esophageal cancer. It is unclear if oral multivitamins are beneficial for preventing or treating esophageal cancer.

Details: A large randomized controlled trial in adults with esophageal squamous dysplasia shows that taking a high-dose multivitamin with minerals once daily for 6 years does not reduce overall mortality, cancer-related mortality, or esophageal cancer-related mortality after 35 years of follow up when compared with placebo ([109683](#)). In addition, the US Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the prevention of any cancer ([108641](#)).

HIV/AIDS. It is unclear if oral multivitamins are beneficial in children or adults with HIV/AIDS.

Details: A meta-analysis of preliminary clinical research in adults with HIV shows that taking multivitamins orally daily for up to 2 years does not affect mortality, CD4+ cell count, or viral load when compared with control. The results were consistent regardless of whether the patient also received antiretroviral therapy or had tuberculosis ([95856](#)). A clinical study in children 5-12 years of age with HIV shows that taking a multivitamin daily for 6 months increases hemoglobin levels, but has no effect on the CD4+ cell count, when compared with baseline. The multivitamin provided either 7 ingredients at the recommended dietary allowance (RDA), 22 ingredients at the RDA, or 22 ingredients at or above the RDA; outcomes were similar for all multivitamin regimens. Most patients in this study were receiving concomitant antiretroviral therapy ([105836](#)). The validity of these findings is limited by the lack of a control group.

Hypertension. It is unclear if oral multivitamins reduce the risk of hypertension.

Details: A meta-analysis of randomized controlled trials in generally healthy adults shows that taking multivitamins with or without minerals orally daily for 2-84 months does not reduce the risk of developing hypertension when compared with control. However, a meta-analysis of 2 small randomized controlled trials in adults shows that taking multivitamins orally daily for 1-2 months lowers systolic blood pressure by 8 mmHg and diastolic blood pressure by 3 mmHg when compared with control ([99351](#)).

Inflammatory bowel disease (IBD). It is unclear if oral multivitamins are beneficial for preventing infections in patients with IBD.

Details: A large clinical study in adults with IBD at risk for infections due to treatment with immunomodulators and/or biologic therapy shows that taking a specific multivitamin with minerals (New Care Multi) daily for 24 weeks does not reduce the incidence of infection when compared with placebo ([113089](#)). However, patients were non-vitamin deficient; it is unclear whether results would be similar in those with vitamin deficiency.

Lung cancer. It is unclear if oral multivitamins are beneficial for preventing lung cancer.

Details: A meta-analysis of population research has found that taking multivitamins orally once daily for up to 18 years is not associated with a reduced risk of developing lung cancer when compared with not taking multivitamins ([95837](#)). In addition, the US Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the prevention of any cancer ([108641](#)).

Myocardial infarction (MI). It is unclear if oral multivitamins are beneficial for preventing either a primary or secondary MI.

Details: A meta-analysis of three clinical trials in healthy patients and patients with existing cardiovascular disease (CVD) shows that taking multivitamins orally daily for 1-11 years does not reduce the risk of MI or mortality from MI when compared with control ([97308](#)). A subgroup analysis of one of these trials in patients with history of MI who are not taking a statin suggests that taking high-dose multivitamins daily for an average of 55 months decreases the risk of cardiovascular mortality, stroke, or recurrent MI by 38% when compared with placebo. However, these results were not observed in patients taking a statin ([99350](#)). Another, large population study in adults without CVD has found that regular use of a multivitamins is associated with an 8% lower risk of MI when compared with not using a multivitamin ([109686](#)).

Osteoporosis. It is unclear if oral multivitamins are beneficial for preventing osteoporotic fractures.

Details: A meta-analysis of 8 observational studies in adults has found that supplementation with a multivitamin is associated with a 51% reduction in the risk of sustaining an osteoporotic fragility hip fracture when compared with no supplementation ([105835](#)). The validity of this finding is limited by the heterogeneity of the included studies.

Prostate cancer. It is unclear if oral multivitamins are beneficial for preventing prostate cancer; most of the available research has found no benefit.

Details: A meta-analysis of population research has found that taking multivitamins orally once daily for up to 10 years is not associated with a reduced risk of developing prostate cancer ([34607](#)). Other population research in US health care workers has also found that regularly taking a multivitamin for an average of 30 years is not associated with a lower odds of developing prostate cancer when compared with not taking a multivitamin ([109932](#)). In addition, the US Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the benefits and harms of multivitamin use for the prevention of any cancer ([108641](#)).

Quality of life. It is unclear if oral multivitamins are beneficial for improving quality of life.

[Details:](#) Preliminary clinical research in elderly adults in an assisted living facility shows that taking a multivitamin containing vitamin A 4000 units, vitamin B1 2 mg, vitamin B2 2 mg, vitamin B6 1 mg, vitamin B12 1 mg, vitamin C 60 mg, vitamin D 400 mg, vitamin E 10 mg, ginseng extract 40 mg, and minerals orally once daily for 3 months does not improve overall quality of life or quality of life subdomain scores when compared with no intervention ([109682](#)).

Stress. It is unclear if oral multivitamins are beneficial for reducing stress.

[Details:](#) A meta-analysis of clinical research shows that taking a multivitamin containing high doses of B vitamins orally daily for 4-12 weeks modestly reduces perceived stress and subclinical anxiety scores in healthy adults when compared with placebo. However, taking a multivitamin with low doses of B vitamins does not affect stress scores ([95846](#)).

Stroke. It is unclear if oral multivitamins are beneficial for preventing stroke.

[Details:](#) A meta-analysis of low-quality clinical research shows that taking multivitamins orally daily for 3-11 years does not reduce the risk of stroke or mortality from stroke when compared with control ([97308](#)). The validity of these results is limited by the heterogeneity of the included studies in relation to cardiovascular risk and multivitamin content.

More evidence is needed to rate multivitamins for these uses.

Administration / Application

- Multivitamins are typically taken orally once daily. They are intended to supplement the diet to aid patients in meeting their Dietary Reference Intakes (DRIs). There is no single standard or requirement that dictates the content of multivitamins. As a result, there is great variability among multivitamin products. For example, some multivitamins target specific patient populations such as older adults, pregnant adults, and children and contain variable nutrients based on the DRI of that specific population. Other multivitamins contain vitamins and nutrients at levels higher than the DRI. Sometimes the levels even exceed the tolerable upper intake level (UL). There are also some specialized multivitamins that contain non-vitamin and non-mineral ingredients ([95864](#)).

Interactions with Drugs

Multivitamins contain a wide variety of ingredients. See specific monographs for interaction information.

Interactions with Supplements

Multivitamins contain a wide variety of ingredients. See specific monographs for interaction information.

[Interactions with Conditions](#)

[GENERAL](#)

Multivitamins represent a wide group of vitamins and minerals that are used alone or in combination; see specific vitamins and minerals for information regarding their interactions with specific conditions.

[ELDERLY](#)

Taking certain multivitamins provided as large tablets or capsules may increase the risk of choking in elderly patients. From 2006 to 2015, about 20% of the reports submitted to the US Food and Drug Administration (FDA) Center for Food Safety and Applied Nutrition Adverse Event Reporting System (CAERS) concerning dietary supplements involved choking or other swallowing problems. About 73% of these reports involved multivitamin supplements, and most of the adverse reports occurred in elderly patients ([100387](#)). Advise elderly patients to avoid multivitamin products that are provided as large tablets due to the increased risk of choking.

Interactions with Lab Tests

Multivitamins represent a wide group of vitamins and minerals that are used alone or in combination. See specific vitamins and minerals for information regarding their interactions.

Commercial Products Containing: Multivitamins

[View All](#)

Theory / Mechanism of Action

General: Multivitamins are intended to supplement the diet to aid patients in meeting daily nutrient recommendations based on the Dietary Reference Intakes (DRIs). Specialized multivitamins are marketed towards different patient populations, disease states, or desired patient outcomes such as improved athletic performance or energy. Multivitamins also often contain components marketed to support immune function, despite a lack of supportive research ([105833](#)). There is no strong evidence to support the use of multivitamins for most patients unless the patient has a vitamin or a mineral deficiency ([95864](#)).

Interactions with Foods

Multivitamins represent a wide group of vitamins and minerals that are used alone or in combination. See specific vitamins and minerals for information regarding their interactions.

References

[See Monograph References](#)

Monographs are reviewed on a regular schedule. See our [Editorial Principles and Process](#) for details. The literature evaluated in this monograph is current through 1/26/2024. This monograph was last modified on 2/21/2024. If you have comments or suggestions, please [tell the editors](#).