***Vitamins and minerals are micronutrients required by the body to carry out a range of normal functions. However, these micronutrients are not produced in our bodies and must be derived from the food we eat.***

**Vitamins** are organic substances that are generally classified as either fat soluble or water soluble. Fat-soluble vitamins ([vitamin A](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-a/), [vitamin D](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-d/), [vitamin E](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-e/), and [vitamin K](https://www.hsph.harvard.edu/nutritionsource/vitamin-k/)) dissolve in fat and tend to accumulate in the body. Water-soluble vitamins ([vitamin C](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-c/) and the [B-complex vitamins](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-b/), such as [vitamin B6](https://www.hsph.harvard.edu/nutritionsource/vitamin-b6/), [vitamin B12](https://www.hsph.harvard.edu/nutritionsource/vitamin-b12/), and [folate](https://www.hsph.harvard.edu/nutritionsource/folic-acid/)) must dissolve in water before they can be absorbed by the body, and therefore cannot be stored. Any water-soluble vitamins unused by the body is primarily lost through urine.

**Minerals** are inorganic elements present in soil and water, which are absorbed by plants or consumed by animals. While you’re likely familiar with [calcium](https://www.hsph.harvard.edu/nutritionsource/calcium/), [sodium](https://www.hsph.harvard.edu/nutritionsource/salt-and-sodium/), and [potassium](https://www.hsph.harvard.edu/nutritionsource/potassium/), there is a range of other minerals, including trace minerals (e.g. [copper](https://www.hsph.harvard.edu/nutritionsource/copper/), [iodine](https://www.hsph.harvard.edu/nutritionsource/iodine/), and [zinc](https://www.hsph.harvard.edu/nutritionsource/zinc/)) needed in very small amounts.

In the U.S., the National Academy of Medicine (formerly the Institute of Medicine) develops nutrient reference values called the Dietary Reference Intakes (DRIs) for vitamins and minerals. [1] These are intended as a guide for good nutrition and as a scientific basis for the development of food guidelines in both the U.S. and Canada. The DRIs are specific to age, gender, and life stages, and cover more than 40 nutrient substances. The guidelines are based on available reports of deficiency and toxicity of each nutrient. Learn more about vitamins and minerals and their recommended intakes in the table below.

Recommended Daily Intake of Vitamins and Minerals for Adults

|  |  |  |  |
| --- | --- | --- | --- |
| ***Vitamin (Common Names)*** | ***Recommended Dietary Allowance (RDA) or Daily Adequate Intake (AI)\**** | | ***Upper Limit*** |
| *Women* | *Men* |
| [**Vitamin A**](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-a/) (preformed = retinol; beta-carotene can be converted to Vitamin A) | 700 micrograms (2,333 IU) | 900 micrograms (3,000 IU) | 3,000 micrograms (about 10,000 IU) |
| [**Thiamin**](https://www.hsph.harvard.edu/nutritionsource/vitamin-b1/) (vitamin B1) | 1.1 milligrams | 1.2 milligrams | Not known |
| [**Riboflavin**](https://www.hsph.harvard.edu/nutritionsource/riboflavin-vitamin-b2/)(vitamin B2) | 1.1 milligrams | 1.3 milligrams | Not known |
| [**Niacin**](https://www.hsph.harvard.edu/nutritionsource/niacin-vitamin-b3/) (vitamin B3; nicotinic acid) | 14 milligrams | 16 milligrams | 35 milligrams |
| [**Pantothenic Acid**](https://www.hsph.harvard.edu/nutritionsource/pantothenic-acid-vitamin-b5/) (vitamin B5) | 5 milligrams\* | 5 milligrams\* | Not known |
| [**Vitamin B6**](https://www.hsph.harvard.edu/nutritionsource/vitamin-b6/) (pyridoxal, pyridoxine, pyridoxamine) | Ages 19-50: 1.3 milligrams  Ages 51+: 1.5 milligrams | Ages 19-50: 1.3 milligrams  Ages 51+: 1.7 milligrams | 100 milligrams |
| [**Biotin**](https://www.hsph.harvard.edu/nutritionsource/biotin-vitamin-b7/) (vitamin B7) | 30 micrograms\* | 30 micrograms\* | Not known |
| [**Folate**](https://www.hsph.harvard.edu/nutritionsource/folic-acid/) (Folic acid; vitamin B9) | 400 micrograms | 400 micrograms | 1,000 micrograms |
| [**Vitamin B12**](https://www.hsph.harvard.edu/nutritionsource/vitamin-b12/) | 2.4 micrograms | 2.4 micrograms | Not known |
| [**Vitamin C**](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-c/) | 75 milligrams\*  (Smokers add 35 milligrams) | 90 milligrams\*  (Smokers add 35 milligrams) | 2,000 milligrams |
| [**Choline**](https://www.hsph.harvard.edu/nutritionsource/choline/) | 425 milligrams\* | 550 milligrams\* | 3,500 milligrams |
| [**Vitamin D**](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-d/) (calciferol) | Ages 19-50: 15 micrograms (600 IU)  Ages 51-70: 15 micrograms (600 IU)  Ages 71+: 20 micrograms (800 IU) | Ages 19-50: 15 micrograms (600 IU)  Ages 51-70: 15 micrograms (600 IU)  Ages 71+: 20 micrograms (800 IU) | 100 micrograms (4,000 IU) |
| [**Vitamin E**](https://www.hsph.harvard.edu/nutritionsource/vitamins/vitamin-e/) (alpha-tocopherol) | 15 milligrams | 15 milligrams | 1,000 milligrams |
| [**Vitamin K**](https://www.hsph.harvard.edu/nutritionsource/vitamin-k/)(phylloquinone, menadione) | 90 micrograms\* | 120 micrograms\* | Not known |
| ***Mineral*** | ***Recommended Dietary Allowance (RDA) or Daily Adequate Intake (AI)\**** | | ***Upper Limit*** |
| *Women* | *Men* |
| [**Calcium**](https://www.hsph.harvard.edu/nutritionsource/calcium/) | Ages 31-50: 1,000 milligrams  Ages 51+: 1,200 milligrams | Ages 31-50: 1,000 milligrams  Ages 51+: 1,200 milligrams | 2,500 milligrams |
| [**Chloride**](https://www.hsph.harvard.edu/nutritionsource/chloride/) | Ages 19-50: 2.3 grams\*  Ages 51-70: 2.0 grams\*  Ages 71+: 1.8 grams\* | Ages 19-50: 2.3 grams\*  Ages 51-70: 2.0 grams\*  Ages 71+: 1.8 grams\* | Not known |
| [**Chromium**](https://www.hsph.harvard.edu/nutritionsource/chromium/) | Ages 31-50: 25 micrograms\*  Ages 51+: 20 micrograms\* | Ages 31-50: 35 micrograms\*  Ages 51+: 30 micrograms\* | Not known |
| [**Copper**](https://www.hsph.harvard.edu/nutritionsource/copper/) | 900 micrograms | 900 micrograms | 10,000 micrograms |
| [**Fluoride**](https://www.hsph.harvard.edu/nutritionsource/fluoride/) | 3 milligrams | 4 milligrams | 10 milligrams |
| [**Iodine**](https://www.hsph.harvard.edu/nutritionsource/iodine/) | 150 micrograms | 150 micrograms | 1,100 micrograms |
| [**Iron**](https://www.hsph.harvard.edu/nutritionsource/iron/) | Ages 31-50: 18 milligrams  Ages 51+: 8 milligrams | Ages 31-50: 8 milligrams  Ages 51+: 8 milligrams | 45 milligrams |
| [**Magnesium**](https://www.hsph.harvard.edu/nutritionsource/magnesium/) | Ages 19-30: 310 milligrams  Ages 31-70+: 320 milligrams | Ages 19-30: 400 milligrams  Ages 31-70+: 420 milligrams | 350 milligrams (from supplements) |
| [**Manganese**](https://www.hsph.harvard.edu/nutritionsource/manganese/) | 1.8 milligrams\* | 2.3 milligrams\* | 11 milligrams |
| [**Molybdenum**](https://www.hsph.harvard.edu/nutritionsource/molybdenum/) | 45 micrograms | 45 micrograms | 2,000 micrograms |
| [**Nickel**](https://www.hsph.harvard.edu/nutritionsource/nickel/) | N/A\*\* | N/A\*\* | N/A\*\* |
| [**Phosphorus**](https://www.hsph.harvard.edu/nutritionsource/phosphorus/) | 700 milligrams | 700 milligrams | Ages 31-70: 4,000 milligrams  Ages 71+: 3,000 milligrams |
| [**Potassium**](https://www.hsph.harvard.edu/nutritionsource/potassium/) | Ages 14-18: 2,300 milligrams\*  Ages 19+: 2,600 milligrams\* | Ages 14-18: 3,000 milligrams\*  Ages 19+: 3,400 milligrams\* | Not known |
| [**Selenium**](https://www.hsph.harvard.edu/nutritionsource/selenium/) | 55 micrograms | 55 micrograms | 400 micrograms |
| [**Sodium**](https://www.hsph.harvard.edu/nutritionsource/salt-and-sodium/) | 1,500 milligrams\* | 1,500 milligrams\* | Not determined; however a chronic disease risk reduction intake [has been established](https://www.hsph.harvard.edu/nutritionsource/salt-and-sodium/) |
| [**Zinc**](https://www.hsph.harvard.edu/nutritionsource/zinc/) | 8 milligrams | 11 milligrams | 40 milligrams |
| \* *Denotes Adequate Intake (AI). An AI is a recommended intake when an RDA can’t be determined. RDA is the average daily dietary intake sufficient to meet the nutrient requirement of 97-98% of healthy individuals in a particular group according to stage of life and gender.* \*\* *May play a role in the human body, but adequate research regarding its nutritional importance is not available so RDA or AI has not been set.* | | | |

**What about multivitamins?**

A diet that includes plenty of [fruits, vegetables](https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/vegetables-and-fruits/), [whole grains](https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/whole-grains/), good [protein packages](https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/protein/), and [healthful fats](https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/fats-and-cholesterol/types-of-fat/) should provide most of the nutrients needed for good health. But not everyone manages to eat a healthful diet. Multivitamins can play an important role when nutritional requirements are not met through diet alone. Learn more about [vitamin supplementation](https://www.hsph.harvard.edu/nutritionsource/multivitamin/).