



# Vitamin D

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## Dosing

The below doses are based on scientific research, publications, traditional use, or expert opinion. Many herbs and supplements have not been thoroughly tested, and safety and effectiveness may not be proven. Brands may be made differently, with variable ingredients, even within the same brand. The below doses may not apply to all products. You should read product labels, and discuss doses with a qualified healthcare provider before starting therapy.

### Adults (over 18 years old)

Vitamin D is included in most multivitamins, usually in strengths from 50 IU to 1,000 IU as softgels, capsules, tablets, and liquids. The Adequate Intake (AI) levels have been established by the U.S. Institute of Medicine of the National Academy of Sciences. Recommendations are: 5 micrograms (200 IU or International Units) daily for all individuals (males, female, pregnant/lactating women) under the age of 50 years-old. For all individuals from 50-70 years-old, 10 micrograms daily (400 IU) is recommended. For those who are over 70 years-old, 15 micrograms daily (600 IU) is suggested. Some authors have questioned whether the current recommended adequate levels are sufficient to meet physiological needs, particularly for individuals deprived of regular sun exposure. The upper limit (UL) for vitamin D has been recommended as 2,000 IU daily due to toxicities that can occur when taken in higher doses.

Not all doses have been found effective for conditions that have been studied. However, ergocalciferol has been used in an oral dose of 400 to 800 IU per day (sometimes higher doses are used in conjunction with calcium) for osteoporosis prevention and treatment.

Calcitriol has been used in an initial oral dose of 0.25 micrograms per day; dosing may be increased by 0.25 micrograms per day at four to eight week intervals in patients with hypocalcemia from chronic dialysis.

Dihydrotachysterol has been used in an oral initial dose of 750 micrograms (0.75 milligrams) to 2.5 milligrams per day for several days for the treatment of hypoparathyroidism. A maintenance dose is typically 200 micrograms (0.2 milligrams) to 1 milligram per day. Ergocalciferol has also been used in an oral dose of 50,000 to 200,000 IU units daily concomitantly with calcium lactate 4 grams, six times per day.

Rickets may be treated gradually over several months or in a single day's dose. Gradual dosing may be 125-250 micrograms (5,000-10,000 IU) taken daily for two to three months, until recovery is well established and alkaline phosphatase blood concentration is close to normal limits. Single-day dosing may be 15,000 micrograms (600,000 IU) of vitamin D, taken by mouth divided into four to six doses. Intramuscular injection is also an alternative for single-day dosing. For resistant rickets, some authors suggest a higher dose of 12,000 to 500,000 IU per day, although this has not yet been proven effective.

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**Children (under 18 years old)**

Adequate Intake (AI) levels have been established by the U.S. Institute of Medicine of the National Academy of Sciences. The recommendation from birth until 50 years old is 5 micrograms per day (200 IU or International Units per day). Children older than one year should not exceed the "upper limit" (UL) of 50 micrograms (2,000 IU) per day; children younger than one year should not exceed the UL of 25 micrograms (1,000 IU) per day. Vitamin D is possibly unsafe when used orally in excessive amounts, with adverse effects including hypercalcemia (high blood calcium levels). Some authors have questioned whether the current recommended adequate levels are sufficient to meet physiological needs, particularly for individuals deprived of regular sun exposure. A 2008 review recommends 400 IU per day for all infants and children, including adolescents, based on evidence from new clinical trials and the historical precedence.

Not all doses have been found effective for conditions that have been studied. However, for hypoparathyroidism, ergocalciferol has been used orally in an initial dose of 8,000 units per kilogram per day for one to two weeks. For maintenance, a dose of 2,000 units per kilogram per day has been used.

Rickets may be treated gradually over several months or in a single day's dose. Based on one clinical trial, a single dose of 600,000 IU of oral vitamin D3 was comparable to a dose of 20,000 IU per day of oral vitamin D3 for 30 days. Gradual dosing may be 125-250 micrograms (5000-10,000 IU) taken daily for two to three months, until recovery is well established and alkaline phosphatase blood concentration is close to normal limits. Single-day dosing may be 15,000 micrograms (600,000 IU) of vitamin D, taken by mouth divided into 4-6 doses. Intramuscular injection is also an alternative for single-day dosing. For resistant rickets, some authors suggest a higher dose of 12,000 to 500,000 IU per day.

Evidence

Safety

Portions of this document last updated: April 1, 2011

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