
VITAMIN D Fact Sheet [G]

BOTTOM LINE:

Vitamin D supplementation may be beneficial in adults with depression, but there is only minimal evidence in pediatric patients with mania. Reserve its use for those who have insufficiency, and have your patients take 1000–2000 IU daily.

PEDIATRIC AND ADULT FDA INDICATIONS:

None.

OFF-LABEL USES:

Depression.

DOSAGE FORMS:

Supplied over the counter as vitamin D2 and D3, as tablets, capsules, and softgels in “international units” (IU) dosing. We recommend D3: 1000 IU, 2000 IU, 5000 IU.

PEDIATRIC DOSAGE GUIDANCE:

Dosing guidelines vary. For depression, use 1000–2500 IU per day.

COST: \$

SIDE EFFECTS:

- Most common: Well tolerated.
- Serious but rare: Vitamin D toxicity possible but very rare. Osteoporosis with doses over 5000 IU per day, and dietary habits such as excessive consumption of carbonated beverages may exacerbate this risk.

MECHANISM, PHARMACOKINETICS, AND DRUG INTERACTIONS:

- Thought to play a role in brain plasticity, neuroimmunomodulation, and inflammation.
- Metabolized by liver and kidneys; t_{1/2}: 12–50 days (varies based on level, source, dose, obesity, race).
- No known significant interactions.

EVIDENCE AND CLINICAL PEARLS:

- Several meta-analyses have found no beneficial effects of vitamin D supplementation in adults with depression. When studies were limited to depressed patients with both vitamin D insufficiency at baseline and adequate dosing of supplementation (>800 mg/day), statistically significant benefits were seen. No studies in pediatric depression.
- One small (n = 16) open-label study of vitamin D3 2000 IU daily in kids (6–17 years) with symptoms of mania showed improvement in mood symptoms.
- Sources of vitamin D include exposure to sunlight, dietary intake, and supplements.
- It's difficult to obtain sufficient daily needs from dietary intake alone. Two types of vitamin D are obtained from dietary sources: D2 (ergocalciferol) from plant sources such as mushrooms and soy milk and D3 (cholecalciferol) from animal sources such as raw fish, mackerel, and smoked salmon. D3 is approximately three times stronger than D2.
- The majority of vitamin D is produced through conversion of 7-dehydrocholesterol via ultraviolet B, after penetration of sunlight on the skin, to vitamin D3.
- Vitamin D is metabolized in the liver to 25-hydroxyvitamin D or 25(OH)D and then in the kidneys to its active form calcitriol, or 1,25-dihydroxyvitamin D. Labs will usually report 25(OH)D level with 30–60 ng/mL as normal range, 21–29 ng/mL as insufficiency, and ≤20 ng/mL as deficiency.

FUN FACT:

A number of things affect a person's vitamin D status, including distance from the equator, community air quality, skin color, and use of sunscreen.