

Vitamin D3

Cholecalciferol — the animal-derived and lichen-derived form of vitamin D

Vitamin D's evidence base has shifted more than almost any other supplement's in the last two years, and almost entirely in one direction. The 2024 Endocrine Society guideline retired the familiar 30 ng/mL target and recommended against routine testing; a 2025 meta-analysis of 46 trials turned the respiratory-infection benefit null. What survives is narrower, more specific, and more useful than the version on the label.

SUMMARY TABLE

Attribute	Summary
Primary uses	Correcting deficiency and preventing rickets/osteomalacia; slowing progression from high-risk prediabetes to type 2 diabetes; modest all-cause mortality reduction in adults over 75; pregnancy outcomes; respiratory infection in children.
Evidence strength	Very high for deficiency correction. Moderate-to-high for diabetes prevention in prediabetes. Evidence of absence — not merely absent evidence — for fractures, falls, cancer incidence, cardiovascular events and adult respiratory infection in replete people.
Effective dose	RDA 600 IU/day (ages 1–70), 800 IU over 70. Upper intake level 4,000 IU/day (age 9+). Practical maintenance default: 1,000–2,000 IU/day.
How to take	Softgel in an oil carrier, with the largest fat-containing meal of the day — dietary fat meaningfully enhances absorption. Daily dosing beats weekly or monthly bolus regimens.
Time to effect	Steady-state blood levels take ~3 months at normal weight; longer (6–12 months) if BMI ≥25, since the vitamin is fat-soluble and sequesters in adipose tissue.
Serious risks	Hypercalcemia at sustained high intake (toxic levels typically >150 ng/mL). High intermittent dosing increases falls: a 2016 trial found falls in 47.9% on 24,000 IU monthly versus 66.9% on 60,000 IU monthly.
Who should avoid it	Granulomatous disease (sarcoidosis, TB, histoplasmosis) or certain lymphomas; primary hyperparathyroidism; existing hypercalcemia; recurrent calcium kidney stones; chronic kidney disease (needs specialist-supervised activated analogs).
Quality markers	USP Verified or NSF Certified; cholecalciferol (D3) explicitly stated, not ergocalciferol (D2); lichen-derived D3 for vegans; per-capsule dose of 1,000 or 2,000 IU.

WHAT THE RECENT EVIDENCE REMOVED

An updated meta-analysis of vitamin D for acute respiratory infection (46 RCTs, ~64,000 participants) found the effect turned null (OR 0.94, 95% CI 0.88–1.00, p=0.057). The VITAL trial (25,871 adults, 2,000 IU/day, 5.3 years) found no reduction in cancer incidence, major cardiovascular events, fractures or depression in a largely replete population. The 2024 Endocrine Society guideline absorbed these findings, recommending against routine testing for anyone and empiric supplementation for only four groups: children/adolescents, adults 75+, pregnant women, and high-risk prediabetes.

WHAT SURVIVED, AND WHAT IT IS WORTH

The strongest positive finding is diabetes prevention: a 2023 individual-participant meta-analysis (3 RCTs, 4,190 people with prediabetes) found a 15% relative risk reduction for progression to type 2 diabetes (HR 0.85), with all safety outcomes null. All-cause mortality in adults over 75 showed a real but modest and statistically fragile reduction (RR 0.96). Buy D3, not D2 — a 2025 review of 20 studies found D2 supplementation actually lowered circulating D3 by a mean of –17.99 nmol/L.

THE BOLUS-DOSING PROBLEM

Dosing frequency matters more than dose size at the high end: a 2016 JAMA Internal Medicine trial found monthly 60,000 IU produced more falls than monthly 24,000 IU with no functional benefit, and the D-Health trial (21,315 older Australians, 60,000

IU monthly) found unchanged mortality and a nominal increase in cancer mortality in exploratory analysis. The Endocrine Society now prefers daily low-dose over intermittent high-dose in adults over 50.

BOTTOM LINE

If you are a child/adolescent, an adult over 75, pregnant, or have high-risk prediabetes, daily D3 above the RDA is a reasonable, guideline-supported choice. If you are a healthy, replete adult taking vitamin D to prevent fractures, falls, cancer, heart attacks, colds or depression, adequately powered trials have looked and not found those effects. Practically: 1,000–2,000 IU of D3 daily with a fatty meal, continuously, skipping the 10,000 IU bottles and monthly megadoses.

SOURCES

1. Demay MB, et al. "Vitamin D for the Prevention of Disease: Endocrine Society Guideline." J. Clin. Endocrinol. Metab., 2024.
2. "Vitamin D for acute respiratory infections: updated systematic review and meta-analysis." Lancet Diabetes Endocrinol., 2025.
3. Manson JE, et al. "Vitamin D Supplements and Prevention of Cancer and Cardiovascular Disease" (VITAL). NEJM, 2019.
4. Pittas AG, et al. "Vitamin D and Risk for Type 2 Diabetes in People With Prediabetes: IPD Meta-analysis." Ann. Intern. Med., 2023.
5. Bischoff-Ferrari HA, et al. "Monthly High-Dose Vitamin D for Prevention of Functional Decline." JAMA Intern. Med., 2016.

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