



# Vitamin D & calcium supplementation: falls, fractures, severe deficiency

## To reduce the risk of fractures or falls – supplements not recommended

- Vitamin D and calcium supplements are not recommended for community dwelling adults who are well nourished and have a low burden of chronic disease

## Vitamin D ± calcium supplementation meta analysis (81 RCTs; 53,537 people)

Majority of trials: community dwelling participants, aged ≥ 65

Total fracture	Hip fracture	Falls
RR 1.00 (95%CI 0.93, 1.07)	RR 1.11 (95%CI 0.97, 1.26)	RR 0.97 (95%CI 0.93, 1.02)

## Health Canada Dietary Reference Intakes: Adults Aged > 50

Age	Vitamin D		Calcium	
	RDA	UL	RDA	UL
51 – 70 males	600 IU	4000 IU	1000 mg	2000 mg
51 – 70 females	600 IU		1200 mg	
> 70	800 IU		1200 mg	

RDA recommended dietary allowance; meets or exceeds the requirement of 97.5% of the population; 97.5% of the population requires less than the RDA; UL upper limit above which risk of adverse events increases; not intended as a target intake; Vitamin D RDA estimated under conditions of minimal to no sun exposure; corresponds to 25-OH-D levels 50 nmol/L; National Academies “it is impossible to know a given patient’s actual requirement and the RDA will nearly always meet the needs of generally healthy people”

## To reduce the risk of severe deficiency in people at risk

- 25-OH-D levels < 30 nmol/L are associated with an increased risk of deficiency and its complications (rickets in children, osteomalacia in adults)
- Vitamin D supplementation at doses 400 – 1000 IU per day can be advised for those with risk factors for deficiency
  - Examples: people living in institutions or who are housebound with limited sun exposure, poor nutrition, conditions or medications that affect vitamin D metabolism
- Higher doses that aim to raise 25-OH-D levels > 75 nmol/L do not reduce disease burden and in some trials have increased the risk of fractures, falls, hospitalization, hypercalcemia, hypercalciuria and bone mineral density losses

## To reduce the risk of hypocalcemia

- Vitamin D and calcium supplements are often included in the clinical trials of osteoporosis medications but are unlikely to provide additive fracture risk reduction [RECORD Trial 2005](#)
- Bisphosphonates and denosumab are contraindicated in people with hypocalcemia
- Check serum calcium before each dose of zoledronic acid and denosumab – replete calcium and vitamin D if necessary