

Vitamin D - the sunshine of your life?

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In 8 minutes ...

- Vitamin D - context
- What is an ideal serum 25-hydroxy-Vitamin D concentration?
- Are most of us really Vitamin D deficient?
- What is the problem with low serum Vitamin D
- What should we do now?

Vitamin D

- The active form (calcitriol) is a hormone, not a vitamin
- SUN (UVB) causes skin to produce Vitamin D₃.
- In the circulation Vitamin D₃ converted to 25-hydroxy-colecalciferol
- In kidney (*and other organs*) 25-OH-colecalciferol is converted to the active hormone calcitriol (1,2 dihydroxy-colecalciferol)
- Calcitriol directly or indirectly controls > 200 genes
- It's not just about bones

What 25-OH-Vitamin D concentration?

	nmol/L	
	Current	Proposed ¹
Severe deficiency		< 20
Deficient		20 - 50
Inadequate	< 50	50 - 80
Sufficient	> 50	80 - 100
Optimal		> 100

Are we deficient in NZ?

Percent NZ adults (> 15 yr) Vitamin D deficient¹

	% < 50 nmol/L	
	Males	Females
European	43%	49%
Maori	56%	68%
Pacific people	62%	79%

Overall 84% of adults had serum concentrations of less than 80 nmol/L.

Percent NZ children (5 to 14 yr) Vitamin D insufficient²

	Mean concentration	% < 37.5 nmol/L
Total		31%
Maori	43 nmol/L	41%
Pacific people	36 nmol/L	59%
European / Other	53 nmol/L	25%

Note: < 37.5 nmol/L is being used to define insufficient

1. Rockell J et al. *osteo Int.* 2006; 17: 1382-89

2. Rockell J et al. *J. Nutrit.* 2005; 135: 2602-08

So what?

- Generalised 'aches and pains' in the elderly and those who 'cover up' or have darker skin pigmentation
- Fractures and falls
- Solid cancers (observational studies)
 - Colon Risk doubled with [Vitamin D] < 50 nmol/L
 - Prostate Risk doubled with [Vitamin D] < 50 nmol/L
 - Breast Risk doubled with [Vitamin D] < 50 nmol/L
 - Colorectal, Bladder, Stomach
- Cardiovascular disease
- Diabetes
- Infections, wheeze, eczema
- **Association versus causation**

So now what?

- Sun exposure
 - 1/4 to 1/2 the erythermal dose (~ 15 minutes)
 - But older skin and darker pigmented skin = reduced synthesis
 - Seasonal variation
- Sunscreen
 - Conflicting
- Supplementation
 - People over 70 years of age
 - Infants to adolescence - 200 iu daily (American Academy of Paediatrics)
 - ? Maori / Pacific people / Indian, Middle Eastern
- Sunlight preferred but ...