

# HYPERVITAMINOSIS B6 IN AUSTRALIA- FROM CLINICAL EXPERIENCE TO GOVERNMENT GUIDELINES: BARIATRIC CARE TEAM WERE A CRITICAL CATALYST FOR CHANGE

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**[v ] I have no potential conflict of interest to report  
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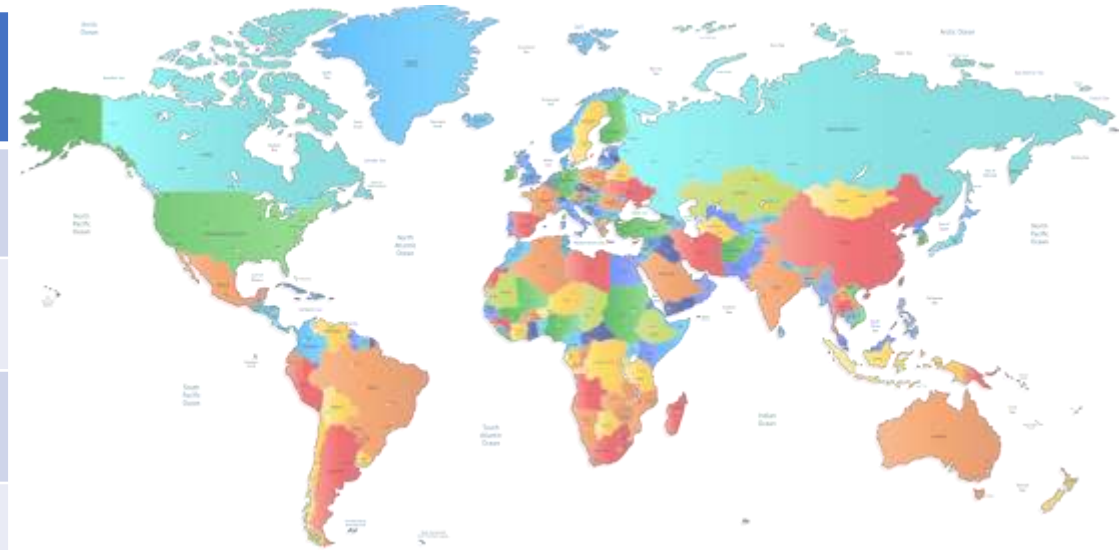
## Background:

- Vitamin B6 (pyridoxine): water-soluble vitamin present in various food products & dietary supplements
  - Multivitamins, Magnesium, B-complex, Zinc
  - Sleep supplements (eg melatonin) and Hair-skin-nails supplements
  - Energy Drinks, supplemented food products, energy drinks, some teas
- Pyridoxal 5'-phosphate (PLP): the biologically-active form
- Fasting plasma PLP concentrations most accurately reflect B6 body stores
- Recommended daily intakes range 1-2 mg/d [Tynes M et al (2021)]

[Nutrient Reference Values | for Australia and New Zealand \(nrv.gov.au\) Vitamin B6](#), Australian Government National Health & Medical Research Council and NZ Ministry of Health - accessed 16 July 2023  
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2016. Scientific opinion on Dietary Reference Values for vitamin B6. *EFSA Journal* 2016; 14( 6):4485, 79 pp.  
[Vitamins and minerals - B vitamins and folic acid - NHS \(www.nhs.uk/conditions/vitamins-and-minerals/vitamin-b\)](#) - accessed 16 July 2023  
<https://www.tga.gov.au/news/safety-updates/peripheral-neuropathy-supplementary-vitamin-b6-pyridoxine> (accessed January 2023)



International regulatory body	Safe Upper Limit
European Food Safety Authority (EFSA)	25mg
National Health Service (UK)	10mg
US Institute of Medicine (USA)	100mg
Association SE Asia Nations (ASEAN) <i>Thailand</i>	100mg <i>2mg</i>
National Health & Medical Research Council (Aus/NZ)	50mg
Ministry of Health Labour and Welfare, (Japan)	40-60mg



**Range  
2mg – 100mg**

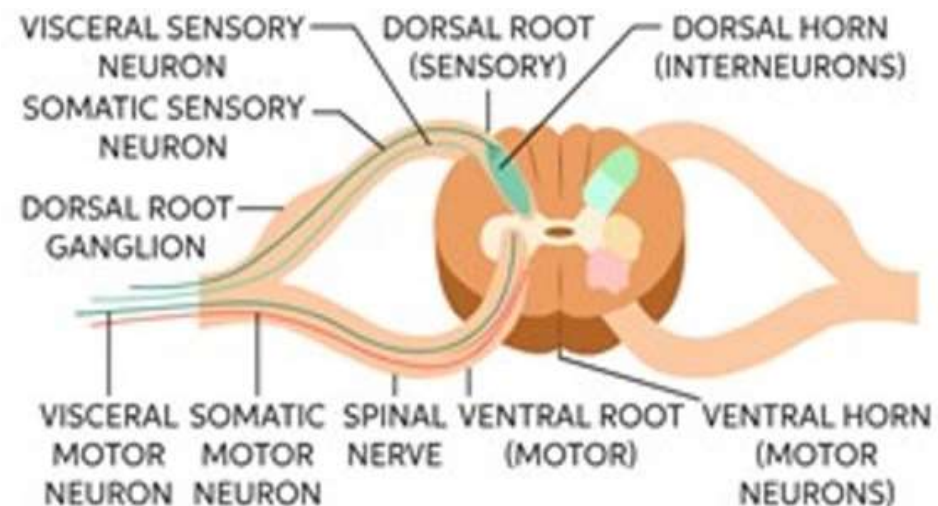
**peripheral neuropathy with doses <50mg/d**

[Vrolijk M et al (2020), tga.gov.au (2022)]



[Nrv.gov.au, EFSA (2016), nhs.uk]

High Vit B6 levels are toxic!



Tynes, M. et al. *Sci Rep* **11**: 17830 (2021).

Yan Guo et al., *European Journal of Endocrinology* Volume 178, Issue 1, Jan 2018, Page 563

Ciobârcă D. et al. *Nutrients* **2020**, **12**, 235.

Kaska L, et al., *World J Gastroenterol.* 2016 Oct 21;22(39):8678-89

## What happened?

BARIATRIC PHYSICIAN  
SITE 1, RAISED



### SITE 1:

N = 2953 BLOOD TEST RESULTS BETWEEN 2015-2021:  
37% ↑ VIT. B6  
24% ↑ ↑ VIT. B6  
VIT. B6 LEVEL RANGE: 20-7960 nmol/L

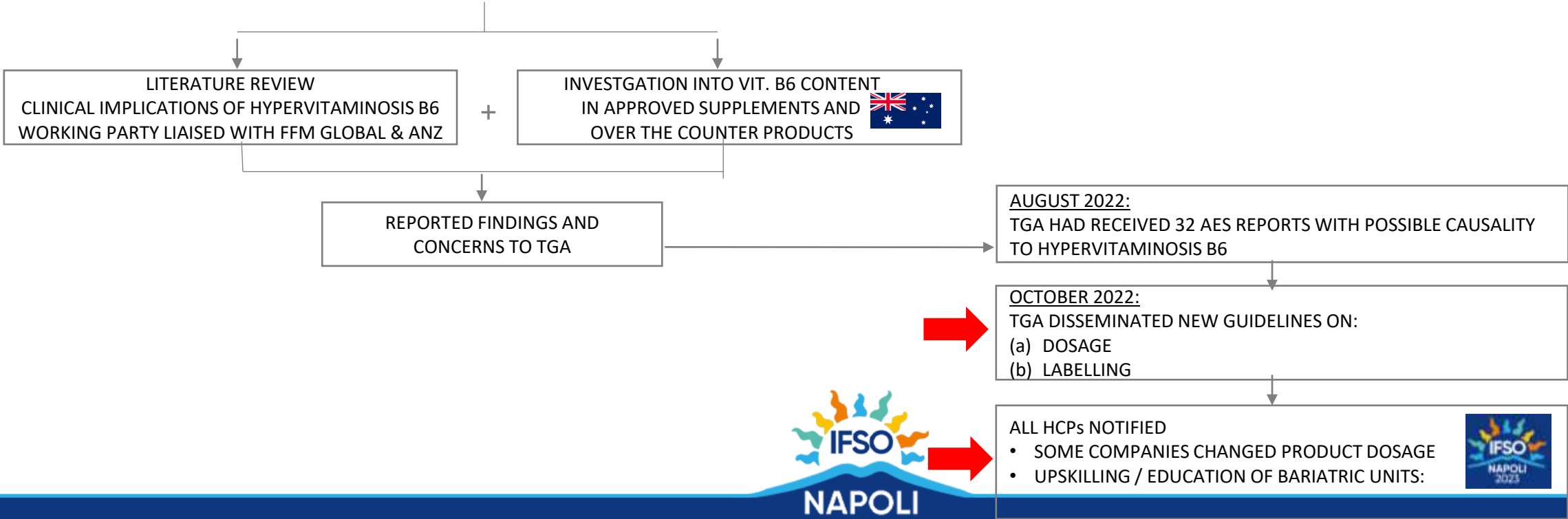
### SITE 2:

N = 612 BLOOD TEST RESULTS BETWEEN MAY 2021 – APRIL  
2022:  
28% ↑ VIT. B6  
18% ↑ ↑ VIT. B6  
VIT. B6 LEVEL RANGE: 34-5980 nmol/L

### DEFINITIONS:

↑ = HIGH VIT. B6 ie >190nmol/L  
↑ ↑ = EXCESSIVELY HIGH VIT. B6 ie  
>250nmol/L  
T.G.A = THERAPEUTIC GOODS  
ADMINISTRATION  
A.E = ADVERSE EVENT  
H.C.P = HEALTH CARE PROFESSIONAL

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## TAKE HOME MESSAGES:

- Symptoms ↓B6 similar to symptoms ↑B6
- Post BMS, recommendations for supplement formulas should be:
  - Balanced to consider risk of deficiency AND excess
  - Reviewed regularly and individualised to pathology results
- Regular follow-up:
  - Critical evaluation of B6 intake from ALL sources is highly warranted
  - Awareness of symptoms of PN and plasma PLP levels should be part of the routine post-bariatric follow-up.
- Bariatric care teams can effect meaningful change-even at a NATIONAL level, whereby regulations for Australian product labelling now require **warning on products containing >10mg**