Investigating current practice of thiamine screening and treatment of deficiencies amongst bariatric multidisciplinary clinician

Nutritional deficiencies have been well documented in patients presenting for obesity surgery. These deficiencies may persist or worsen as a consequence of bariatric surgery [1, 2]. Some nutrient deficiencies may be common with less severe and more manageable consequences. However other nutrient deficiencies such as Thiamine deficiency may not be considered as common but have the potential to cause more severe or in some cases irreversible side effect. Furthermore there is an assumption that its deficiency is rare and the fortification of modern diet should meet the requirements. However, Thiamine is poorly studied and hence deficiencies and consequences may be underreported in current clinical settings [3].

Thiamine or vitamin B1 is an essential coenzyme for numerous pathways of the nervous system and despite its availability in major food groups such as grains, cereals, meat and fish; the body does not store much thiamine and levels can become depleted within 20 days of poor dietary intake [4]. Acute, post-operative gastrointestinal symptoms; such as vomiting, poor dietary tolerance and non adherence to supplementations in addition to a suboptimal pre-operative nutritional status, increases the risk of thiamine deficiency [5]. The deficiency can result in a neurological disorder called Wernicke's encephalopathy (WE), which is characterised by a classical clinical triad of symptoms: ocular impairment, cerebellar dysfunction, and confusion [6, 7]. Moderate degree of Thiamine deficiency has vague signs and symptoms so it can go undiagnosed for sometime [9].

A systematic review on WE in bariatric surgery highlighted that despite the higher than previously reported incidence of thiamine deficiency, there are limited studies reporting on thiamin deficiency status and best management. They recommended further research into monitoring thiamine status, recommending supplementation and prevention of thiamine deficiency in this population [8].
Despite the available international guidelines, the recommendation, screening and treatment of thiamine deficiency are not known in the clinical practice. Furthermore based on resources and individual private clinic preferences the practice is inconsistent across Australia and New Zealand clinical practice settings.

The aim of this study was to explore the current clinical practices with regards to supplementation, screening, prevention and treatment of low thiamine levels across the bariatric clinical units in Australia and New Zealand. The results of this study will in turn identify the current gaps in knowledge and clinical practice of thiamine management. It also has the potential to improve clinical practice and help prevent severe complications.

1. Mechanick JI, Apovian C, Brethauer S, Garvey WT, Joffe AM, Kim J, et al. CLINICAL PRACTICE GUIDELINES FOR THE PERIOPERATIVE NUTRITION, METABOLIC, AND NONSURGICAL SUPPORT OF PATIENTS UNDERGOING BARIATRIC PROCEDURES - 2019 UPDATE: COSPONSORED BY AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS/AMERICAN COLLEGE OF ENDOCRINOLOGY, THE OBESITY SOCIETY, AMERICAN SOCIETY FOR METABOLIC & BARIATRIC SURGERY, OBESITY MEDICINE ASSOCIATION, AND AMERICAN SOCIETY OF ANESTHESIOLOGISTS - EXECUTIVE SUMMARY. Endocrine practice : official journal of the American College of Endocrinology and the American Association of Clinical Endocrinologists. 2019;25(12):1346-59. Epub 2019/11/05. doi: 10.4158/gl-2019-0406. PubMed PMID: 31682518. 2. Parrott J, Frank L, Rabena R, Craggs-Dino L, Isom KA, L. G. American Society for Metabolic and Bariatric Surgery Integrated Health Nutritional Guidelines for the Surgical Weight Loss Patient. Surgery for Obesity and Related Diseases. 2016;13:727–41.
3. Lewis C, de Jersey S, Hopkins G, Hickman I, Osland E. Does Bariatric Surgery Cause Vitamin A, B1, C or E Deficiency? A Systematic Review. Obesity Surgery. 2018;28 3640–57.
4. Sechi G, Serra S. Wernicke's encephalopathy: new clinical settings and recent advances in diagnosis and management. Lancet Neurology. 2007;6:442– 55.
5. Aills L, Blankenship J, Buffington C, Furtado M, J. P. Bariatric Nutrition: Suggestions for the Surgical Weight Loss Patient. Surgery for Obesity and Related Diseases. 2008;4(5):S73-S108.
6. Moizé V, Ibarzabal A, Sanchez Dalmau B, Flores L, Andreu A, Lacy A, et al. Nystagmus: an uncommon neurological manifestation of thiamine deficiency as a serious complication of sleeve gastrectomy. Nutrition In Clinical Practice: Official Publication Of The American Society For Parenteral And Enteral Nutrition.
2012;27(6):788-92. doi: 10.1177/0884533612453746. PubMed PMID: 23042832.
7. Kuhn AL, Hertel F, Boulanger T, Diederich NJ. Vitamin B1 in the treatment of Wernicke's encephalopathy due to hyperemesis after gastroplasty. Journal of clinical neuroscience : official journal of the Neurosurgical Society of Australasia. 2012;19(9):1303-5. Epub 2012/06/26. doi: 10.1016/j.jocn.2011.11.030. PubMed PMID: 22727204.
8. Aasheim E. Wernicke Encephalopathy After Bariatric Surgery. A Systematic Review. Annals of surgery. 2008;248(5):714–20.
9. Kerns JC, Arundel C, Chawla LS. Thiamin deficiency in people with obesity. Adv Nutr. 2015;6(2):147-53. Epub 2015/03/15. doi: 10.3945/an.114.007526. PubMed PMID: 25770253; PubMed Central PMCID: PMCPMC4352173. 10. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Journal of

medical Internet research. 2004;6:e34.