Complete multivitamin and mineral supplement is recommended post bariatric surgery (BOMSS 2014), although there is no clear guidance on the levels of supplementation needed for patients on dialysis. Micronutrient supplements available on prescription contain vitamin A.

Vitamin A homeostasis is altered in CKD with raised levels of vitamin A and retinol binding protein 4 (RBP-4). Due to impaired metabolism of RBP-4-This case study details the medical events in a dialysis patient who underwent a sleeve gastrectomy and had a standard micronutrient prescribed and the effects on their blood vitamin A level.

Patient X commenced dialysis in 2008 and underwent a sleeve gastrectomy in 2011 to help with transplant list activation (Weight of 102kg, BMI=40). One year post surgery she had lost 23kg (60% excess weight loss (EWL) Weight 79kg, BMI=31). Dietetic review in December 2015 revealed she was not on a micronutrient supplement therefore Forceval once daily was started, to comply with new guidance. As her weight loss was more than she desired (weight = 64kg, BMI=25; EWL = 98%), high energy high protein (HPHE) drinks were commenced. Weight loss continued to a low of 57kg (116% excess body weight) over the following 2 years despite meeting theoretical requirements for weight gain with food, food fortification with oils and HEHP drinks. Medical investigations were carried out and no clear medical reason to explain this catabolism was identified. Early 2017, in view of best practice, a vitamin A level was measured, and vitamin A was significantly raised at 9.4umol/L (reference range 0.8-3.4umol/L). Micronutrient supplement providing vitamin A and diet were reviewed. It transpired that Patient X was consuming significant amounts of palm oil; a rich source of betacarotene (vitamin A), and had increased her intake when advised to increase oil to reverse the weight loss trend. Additionally, she was consuming chicken liver sandwiches a few times per week. Palm oil contains 13,334IU vitamin A per 15mL, chicken liver 14,378IU per 100g and Forceval 2,500IU per tablet. For the general (non-renal) population the recommended amount is2,000IU daily and thus patient X was consuming more than 15 times the recommended amount from her the liver and oil alone. These sources were all stopped and she was recommended a pregnancy micronutrient supplement as it is free of vitamin A. Her vitamin A level 1 year later was normalised at 3.29umol/L and her weight increased to 71kg with no other significant medical intervention and a lower energy intake.

There is limited evidence for weight loss as a clinical symptom of hypervitaminosis A. One study from 1953 presents a case study of a non-CKD patient who developed weight loss in addition to other symptoms as a result of vitamin A supplementation. As in this case, these symptoms were reversed on cessation of vitamin A. Animal studies show increased thermogenesis of brown fat and increased protein breakdown with hypervitaminosis A. Our case study adds to the limited body of evidence that vitamin A toxicity may lead to unintentional weight loss and sources from food and supplements need to be considered to avoid toxicity. Monitoring of vitamin A pre and post bariatric surgery is patients with CKD is recommended.

BOMSS Guideline working party 2014 **BOMSS Guidelines on perioperative and postoperative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery**