

Test	Action
FBE	Hb: check micro/macro / normocytic anaemia. Treat cause eg menorrhagia. Correct menstrual losses pre-operatively. Platelets: <100 delay surgery and notify surgeon <150 request platelet function studies and notify surgeon >100000 notify surgeon Low threshold for checking thyroid autoantibodies for Hashimoto's
TFT	Hypothyroid, no hx of thyroid issues or meds: TSH >10 and low free T4: request antibodies, treat as newly diagnosed hypothyroid and inform surgeon. TSH <10, request antibodies, consider commencing oroxine if BMI>50 or T2DM ,rpt 6 weeks post op. If surgery soon and antibody negative, BMI <50 and no T2DM- rpt 6 weeks post op and don't treat as usually improves with surgery. Hyperthyroid, no hx thyroid issues or meds: Check antibodies/ TRab, treat per protocols. May need to delay surgery Think gallstones, NAFLD, meds, hepatitis, other liver conditions
Liver	Symptomatic cholelithiasis or choledocholithiasis - need to manage it before doing any procedure excluding duodenum eg OABG, RYGB as it is very hard to access after surgery Obstructive choledocholithiasis suspected- ix with US to check for sludge, dilated bile duct - will do a cholecystectomy and intrap op cholangiogram if symptomatic. If no sludge or stones in gall bladder but dilated bile duct – rare picture. Exclude cholangiocarcinoma, pancreatic head tumour etc refer for MRCP +/- hepatologist. NAFLD/ medications /laxatives/ diuretics - common. Bilirubin elevation: • Check for choledocholithiasis • Gilberts disease (impaired conjugation): usually elevated in isolated well patient- will cause elevated bilirubin and post op nausea. • Consider haemolysis (haptoglobin, LDH, reticulocytes and film) • Check for pre hepatic (normal stool, normal urine), hepatic (dark urine, normal stool) or post hepatic (dark urine, pale stool) ALP elevation: • If raised ALP and normal GGT- non hepatobiliary cause- marker for bone turnover. Check PTH and vit D, osteoporosis risk factors • ALT > ALP: hepatocellular pattern of injury • ALP> ALT: cholestatic pattern of injury Check renal function (renal osteodystrophy) GGT: • Mildly raised GGT and ALT: etoh, meds or check hepatitis serology • If all liver functions are all mildly raised- most likely NAFLD, consider hepatitis serology • Highly raised with ALP and bili: cholestatic AST:



	• ALT> AST – chronic liver disease- hepatologist review or liver biopsy at times of surg • AST> ALT –indicates cirrhosis. Referral to hepatologist and fibroscan or further investigation for acute etoh hepatitis LD: • LDH elevated- check haemolysis index • If very high- check lipase and amylase-early pancreatitis • Bicarbonate abn: laxative use or diuretic misuse • Increased anion gap: may be an only sign of met acidosis from laxative use (bicarb loss from diarrhoea). Can create issues with anaesthesia.
UEC	• Creatinine and urea elevated: dehydration if normal renal function. Maintain adequate hydration in liquid phase- increased risk of uric acid stones post op. • eGFR reduced for age- investigate and treat. If still low and no cause found. Do 4 weekly UEC when starting ppi post op.
Calcium	Check albumin (calcium binds to albumin) and corrected calcium. Hypercalcaemia • stones, bone pain, abdo pain, constipation, fatigue, thirst • Check PTH, TFT, medications Hypocalcaemia • paraesthesia and anxiety, irregular heart beat, abdominal cramps • check low PTH, renal function and abnormal low protein, elevated LD
Phosphate	Low phosphate • Consider malnutrition, sig etoh intake, chronic diarrhoea, medications (laxatives, ppi, aluminium containing antacids, post iron infusion, theophylline) • Symptoms: bone pain, muscle weakness, anorexia • If mildly low- and asymptomatic- increase skim milk intake • If sig decrease or symptomatic- supplement phosphate + calcium carbonate and phosphate- warn of diarrhoea Elevated phosphate: • Rare: delay surg+ look for a cause • low corrected calcium, poor renal function or low bicarb/anion gap- metabolic or resp acidosis • Hyper proteinemia can falsely elevated levels -with concurrent high protein, elevated globulin, haemolysis, or elevated bilirubin. • Treat- referral to renal physician for phosphate binders, restriction or dialysis
Protein Albumin	Low protein: • T Protein <65- low total protein, check albumin-and if there are elevated LFTs • Albumin <38 • If not maintaining protein- usually vegan/ vegetarian with no eggs- SADI/ RYBG/ OABG not appropriate. • Look at session with dietitian and increase to 100g protein/ day and recheck. If not rising- need to exclude protein malabsorption disorder/ pancreatic enzyme deficiencies – not looking at hypoabsorptive procedures in these patients. • Also consider NAFLD, consider inflammation- acute phase reactant and can cause decrease albumin production, excessive loss from nephrotic syndrome/diabetes. Elevated globulin rare- refer Protein electrophoresis and haem review.

Hba1c	Hba1c >9- delay surgery to optimise control, consider endo involvement Hba1c 6-9-optimize control pre op. metformin if not already on it – continue this 12 months post operatively to assist with weight loss Meds: SGLT 2- cease at time of VLED avoid euglycaemic ketoacidosis
Cholesterol	total Chol >10- commence statin Continue statin post op – at least 12 months – plaque stabilisation. Total Chol < 10- but not on statin- wouldn't start one necessarily Monitor: transitory rise in TC during rapid weight loss phase If on statin – Continue for 12 months post op

NUTRITIONAL BLOODS

** = ALL RED FLAG deficiencies require correction before surgery otherwise:

Sleeve: able to catch up. Commence supplement at puree phase not liquid phase. Can cause nausea.

Bypass: start supplement pre surgery.

Long limb bypass, SADI or revisional: correct pre surgery

TEST	LEVEL	Correction
Corrected Calcium	<2.1 **	Calcium citrate 1200mg daily (not Po4 or carbonate- increases risk of renal stones and also better absorbed in low acid environment)
Vit A – important to correct - childbearing age	<0.7** <1 ** 1-1.6 2.4-3 >3	Injection 100000IU ASAP Symptomatic: 100000 IU injection ASAP Asymptomatic: 10 000IU daily 3/12 10000IU daily for 2/52 then 5000IU daily for 3/12 Consider topical or dietary sources, no action required Cease topical/ dietary sources of vit A, assess cholesterol
Vit D	<20 ** 20-50** 50-70	Injection – only in hospital. 100000IU ASAP then oral after. Assess OP risk and DEXA. Ostevit D 7000IU daily for 60 days pre op (8 weeks only then recheck) 21000IU weekly for 3 months (3 ostevit /week or 3000IU /day) Warn patients re daily ostevit dosing- may get push back from pharmacy or call pharmacy
PTH elevated		Correct vit D – if normalised vit D- Request vit D, LFT, PTH and ionised calcium on same day- to assess for primary hyperparathyroidism
Iron – low threshold for replacing IV	**Ferritin <50 Low Iron TIBC elevated Saturation <16 Ferritin>50 Serum iron low TIBC low Saturation <16 Ferritin >100, Serum iron low TIBC low Saturation <16 Ferritin >100 Serum iron high TIBC N or low Saturation elevated Ferritin >300	Give iron infusion or ferro grad C second daily for 3months Anaemia of chronic disease, clinical assessment required Acute phase reactant, likely still iron deficiency with concurrent inflammation, consider PO supplement. Iron overload, consider iron free multi vit postop Rpt 3 months , if persistently elevated consider gene testing for haemochromatosis.



B1 (thiamine) Rare to see deficiency in absence of vomiting/diarrhoea /etoh	Low B1 = ** Symptomatic	Cardiac or neuro sx- Refer to ED 200mg IV thiamine TDS Wernicke's: ED 500mg IV day 1-2, 250mg IV day 3-5 Continue 100mg /daily until expected recovery complete
B9 (folate)	Asymptomatic	Supplement oral 100mg TDS for 1 week. Commence ASAP
	<13**	**Childbearing age- MegaFol 500mcg daily ASAP prior to surg Otherwise commence MegaFol 500mcg daily post op
B12	<160 **	1000mcg daily sublingual spray or wafer or 1000mcg IM daily 7/7
	<330** Symptomatic	1000mcg daily as sublingual spray or wafer If <1/12 to surgery 1000mcg IM daily 7/7
	<330 Asymptomatic	Commence 500mcg daily as sublingual spray or sublingual wafer
Zinc	<12 (LSG)	30mg daily for 3/12 , if copper <14 supplement 1mg copper concurrently
	<15 (Bypass)	40mg tablet daily for 3/12 , supplement copper 1mg daily if Cu <14
	<20 (Bypass)	Supplement post op- blackmores bio zinc 14.9mg 1 per day for 3 months then re-test . If Cu <11 supplement with 1mg copper daily whilst taking zinc.
Copper	Low	Supplement 3-8mg Copper Gluconate or sulfate
	Elevated	Consider switching from OCP, consider wilsons disease lx
B6- not routinely checked		Currently discussions around elevation of b6. Aus: Choline version of b6 – half life of 15 days. Elevation of b6 which can cause neurological symptoms. Discussion to check if preoperatively. Possibly changing multivitamin preparations to diff forms of b6 with shorter half life.