1. Introduction and Who Guideline applies to

1.1 This guideline describes the Nutrition and Dietary Management of Adult Bariatric Surgical Patients covering the University Hospitals of Leicester (UHL) patient journey from referral to secondary care, pre-operative, peri-operative and post-operative care. The patient journey starts with a GPreferral to the Primary Care Specialist Weight Management Clinic and the Primary Care Specialist Weight Management Dietitian refers the patient to UHL as appropriate, as part of the agreed care pathway (see Appendix 1.)

1.2 This guideline applies to adult patients who have been referred for consideration of bariatric surgery. At referral patients will meet NICE (2014) criteria for surgery and have a Body Mass Index (BMI) of 40 kg/m^2 or over, or 35kg/m^2 or over plus co-morbidity, as assessed by the referring GP. The aim of the document is to provide a reference for other dietitians who may need to provide cover and an evidence-based resource for the adult bariatric surgical multi-disciplinary team (MDT).

1.3 The role of the Bariatric Specialist Dietitian is summarised by NICE (2014) who recommend regular postoperative specialist dietetic monitoring, covering

- information on the appropriate diet for the procedure
- monitoring of micronutrient status
- information on patient support groups
- individualised nutritional supplementation
- support and guidance for long term weight loss and weight maintenance

1.4 The Bariatric Specialist Dietitian is a key member of the UHL adult bariatric surgical MDT. Other members include:-

- Upper GI Consultant Surgeons,
- Specialist Weight Management Dietitians providing specialised assessment and pre-operative work-up in primary care (employed by LPT NHS Trust working closely with UHL MDT members)
- There is input from Diabetes/Endocrinology for prescribing novel medications for weight loss.
- There is input as required from: Medical Psychology, Liaison Psychiatry, Anaesthetics and Chemical Pathology/Metabolic Medicine as well as input from the ward team.

1.5 The Dietitian must liaise closely with the Bariatric Surgical team about patients in the perioperative phase of their journey and at other times if there are concerns or queries about a patient's progress.

1.6 The Dietitian should list all patients requiring discussion at Bariatric MDT on the the excel spreadsheet on the Bariatric shared drive "Bariatric Nurse and Dietitian.xls". After the meeting the spreadsheet should be updated with the outcome of discussions and emails sent to relevant surgeons regarding any actions needed. The purple bariatric pathway should ideally be used to document all dietetic contact other than telephone reviews.

2. Guideline Standards and Procedures

The patient follows an agreed pathway starting in Primary Care (Appendix 1). In UHL the patient journey includes the following steps all of which require Specialist Dietetic input:

- Discussion at Bariatric MDT (Appendix 5)
- Attending Bariatric Clinic (Appendix 6)
- Assessment for Saxenda for weight loss (Appendix 7)
- Dietetic monitoring whilst waiting for surgery (Appendix 8)
- Dietetic pre-assessment 2 weeks before surgery (Appendix 11)
- Dietitians peri-operative review (Appendix 12)
- Dietetic telephone review 1-2 weeks after surgery (Appendix 14)
- Weight Loss Surgery follow-up clinic at 8 weeks after surgery (Appendix 15)
- Dietetic Bariatric Surgery follow-up clinic at 6, 12 and 24 months after surgery (Appendix 16, 17).

3. Education and Training

Training requirements for the Bariatric Specialist Dietitian are identified in the Extended Role Approval and Re-approval documentation. Training for the wider MDT is available to support the use of this Clinical Guideline from the Bariatric Specialist Dietitian. Training should be sought by adult dietitians who are likely to need to provide emergency cover for the Bariatric Specialist Dietitian. Ward based training sessions for nursing and/or medical staff can be requested from the Bariatric Specialist Dietitian. There is a powerpoint presentation available for ward-based medical, pharmacy and nursing staff.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Clinical Reported Outcome Measures (CROMS) as per NICE CG189 (2014) (1)	National Bariatric Surgery Registry (NBSR) (outcomes and complications of different procedures, change in comorbidities)	Senior Specialist Dietitian Bariatric Surgery	Annual	At bariatric MDT

5. Supporting References (maximum of 3)

1. Obesity: identification, assessment and management. NICE Guideline CG189, National Institute for Health and Care Excellence November 2014
https://www.nice.org.uk/guidance/cg189

2. British Obesity and Metabolic Surgery Society Guidelines on perioperative and postoperative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery—2020 update
Mary O'Kane, Helen M. Parretti et al First published: 02 August 2020 **https://doi.org/10.1111/obr.13087**

3. Liraglutide for managing overweight and obesity. NICE Technology appraisal guidance [TA664] Published: 09 December 2020 https://www.nice.org.uk/guidance/ta664

4. Leicestershire Health Community Medicines Formulary: Guidance on prescribing in obesity

http://www.leicestershireformulary.nhs.uk/chaptersSubDetails.asp?FormularySectionID=4&SubSectionRef=04.05&SubSectionID=A100&drugmatch=5450#5450

6. Key Words

Bariatric, Obesity, Surgery, Dietitian

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) Jane Calow, Senior Specialist Dietitian Bariatric Surgery	**Executive Lead** Cathy Steele, Head of Service – Nutrition and Dietetics
Details of Changes made during review: October 2021 Appendix 1. Patient pathway Appendix 2: Description of Bariatric Surgical Clinic Appendix 3: Blank record of MDT discussion – removed Appendix 5: Description of Bariatric MDT Appendix 6: Description of Virtual blood test results HISS clinic Appendix 7: Procedure for assessing and reviewing patients for suitability for Saxenda pre-surgery. Appendix 8: Dietetic monitoring for patients listed for bariatric surgery Appendix 9: Out of area patients who have not completed Tier 3 Specialist Weight Management elsewhere Appendix 10: STOPBang Sleep Apnoea screening tool Appendix 11: Dietetic telephone review at pre-assessment stage Appendix 12: Dietitians peri-operative review Appendix 15: Procedure for First clinic visit after surgery Appendix 16: Dietetic follow-up after surgery Appendix 18: Blood test ordering stickers Appendix 22: Common problems after weight loss surgery Appendix 25: Failure to attend for post-operative follow-up Appendix 26. Discharge back to the GP	

Pathway for management of severe obesity and/or Bariatric Surgery

University Hospitals of Leicester NHS
NHS Trust

Appendix 1

In Primary Care
Patient asks GP for help with their weight or referral made by Diabetes Consultant.

GP assessment:

1. Must have attempted Tier 2 Obesity services initially (can include Lifestyle, Eating and Activity Programme (LEAP)/Diet, Health and Activity in Leicester (DHAL), Leicestershire Weight Management Service, slimming clubs) +/- Exercise on Prescription +/- Orlistat). If achieved, check
2. Eligibility: BMI 40kg/m² or above, or 35 kg/m² or above with co-morbidity (diabetes, impaired glucose tolerance, hypertension, sleep apnoea, polycystic ovary syndrome, osteoarthritis)
3. Motivation: Patients must engage with the Tier 3 clinic for 6-12 months before they can be referred for surgery. Significant motivation and willingness to work hard at changing lifestyle are essential for success. If the patient is not ready to engage suggest delaying referral until they are ready.
4. Smoking: offer support to give up (smokers will not be offered surgery).
   Once above achieved, GP refers patient to
   Primary Care Specialist Weight Management Clinic, LPT.

Primary Care Specialist Weight Management online group education session 1.5 hours (non-mandatory)
Covers all options available for weight management including: diets, exercise, medication, surgery. Emphasises the commitment required and aims to ensure patients have realistic expectations of the service offered.
Patients are then invited to book a dietetic appointment.

Primary Care Specialist Weight Management Clinic
Patient attends an **assessment** appointment covering
Weight history, Medical history, Sleep apnoea screen, Dieting history, Current eating patterns, Motivation to change lifestyle, Options for improvement, Options for optimising comorbidities

Action plan to include self-monitoring of progress, referral to sleep clinic if indicated

Patient attends regular appointments to review progress over 6 months.
6 months review: if patient is making good progress and wishes to be considered for surgery, Bariatric Dietitian briefly assesses medication, medical history, psychiatric history, checks compliance with any Sleep Clinic advice, and refers to surgical MDT to discuss any concerns.

OR if more progress needed

Patient attends for a further 6 months to consolidate lifestyle improvements made. Must research surgical options available.

After 6-12 months of regular engagement in Primary Care Specialist Weight Management Clinic, the Primary Care Bariatric Dietitian refers patient to Bariatric Consultant Surgeons, UHL.

In UHL NHS Trust, before surgery
Patient sees an Upper GI Surgeon to discuss surgical options, motivation to have surgery, risks and benefits of surgery and any further work-up required (may need to see anaesthetist)

Patient is listed for surgery if suitable. Must engage with UHL Bariatric Dietitian support, continue healthy lifestyle and remain weight stable whilst waiting for surgery.

Patients who meet the criteria for Saxenda (GLP-1) may be offered this whilst waiting for surgery (people with impaired glucose tolerance and a cardiovascular risk factor such as hypertension, sleep apnoea, hyperlipidaemia).

Patient attends a Nurse-led Pre-assessment clinic and a telephone dietetic review and follows a pre-operative diet for 1-2 weeks.

Patient has surgery

After surgery
Patient is seen on the ward and/or has dietetic telephone follow-up in the first 2 weeks

Patient attends an 8 week follow-up appointment with the Bariatric Specialist Dietitian

Patient attends for Bariatric Dietetic follow-up at 6 months, 1 year and 2 years. (Blood tests are requested in advance of follow-up appointments by the Bariatric Specialistl Dietitian)

At 2 years patients are discharged from the Specialist Clinic with recommendations for ongoing monitoring.

After discharge

GP conducts an
Annual bariatric review consisting of

Nutritional blood testing including trace elements and fat soluble vitamins

This is followed by face-to-face review of
Weight and BMI
Co-morbidities
Blood test results
Vitamin and mineral supplements taken
Eating patterns
Exercise.

(HISS clinic codes RW13OB, DE3OB, DB13OB, CDS3OB)

UHL bariatric clinics are booked via HISS and medical case notes provided by Clinic Coordinators.

Procedure
The clinic is held weekly on Wednesday mornings from 9am in Clinic Room 2, Jarvis clinic A, LRI. Four Consultant Upper GI Surgeons share the whole caseload and lead the clinic according to a rota. The clinic is also attended by the UHL Bariatric Specialist Dietitian.

The Bariatric Specialist Dietitian should take an iPad to clinic to check results and reports on iLAB or on ICE as required by the Consultant Surgeon.

There is a clear plastic box folder which is required during the clinic which is kept next to the Nurses Office in Jarvis clinic. Content includes

- "A Guide to Weight Loss Procedures" patient leaflet
- "Getting the best out of bariatric surgery" patient booklet
- Purple Bariatric pathway (proforma for documenting the entire UHL patient journey)
- Patient contract (Appendix 6)

NB. The Bariatric Specialist Dietitian is responsible for copying the patient contract and replenishing stocks of the pathway and all booklets. These are kept in the store room in the Nutrition and Dietetic Department, Poppies Building. NB. Links to Patient leaflets should be sent to patients via email wherever possible. Use of printed copies should be limited to patients without internet access.

Patient's weight, height and BMI are measured by the clinic nursing staff.

Purpose of the joint clinic
Patients are either seeing the Consultant Surgeon for the first time or are returning for follow-up so that a decision can be made about surgery, or they are post-operative patients who have developed problems needing surgical review e.g. pain, vomiting.

For pre-surgical patients, weight history and motivation for seeking surgery are explored. Surgical options may be discussed. Patients sign a contract when they are listed for surgery (Appendix 4).

Recommendations for the Dietitian in joint clinic (Pre-surgery patients)

1. The Bariatric Specialist Dietitian with the Consultant Surgeon should review the LPT Primary Care Dietitian's summary letter in the notes. This gives detail of progress in the Primary Care Specialist Weight Management Clinic. They should take note of any concerns identified. Use the STOPBang tool (Appendix 10) where patients have not been screened for sleep apnoea.

2. If required during the consultation the Bariatric Specialist Dietitian should give their opinion as to the patient's suitability for a procedure.

3. Where patients are listed for surgery the Bariatric Specialist Dietitian should

- Complete Combined Haematology/Chemical Pathology blood forms (2 per patient using standard stickers (see Appendix 18))
- Take patients email address and email a link to the leaflets "Getting the Best out of Bariatric Surgery" and "A Guide to Weight Loss Procedures" from YourHealth patient information website. They may be asked to provide brief advice on the pre-operative and post-operative diets.
- Add the patients name to the next available MDT discussion (NB allow 2-3 weeks after the clinic for letters to be added to the medical notes)
- Add the patients name and details to the bloods ordered spreadsheet and check for blood test results in 3-4 weeks (see Appendix 6.)

Surgery comparison table

Appendix 3

Procedure	Gastric Balloon	Gastric Band	Sleeve Gastrectomy	Gastric Bypass (Roux-en-Y or mini)
Effects	Variable loss of appetite Minimal restriction	Variable restriction Little change in appetite	Moderate restriction in first 6-12 months Reduced appetite	Moderate restriction in first 6-12 months Early satiety Aversion to sweet foods (dumping syndrome)
Surgery Risks	Risk of death < 1 in 2000 Complications 1 in 200	Risk of death: 1 in 2000 Complications: Early 1 in 100 Late 1 in 20	Risk of death: 1 in 500 Complications: 1 in 20	Risk of death: 1 in 200 Complications: 1 in 20
Hospital Stay	Day-case	Day-case or 1 night	2-3 nights	2-3 nights
Recovery	1 day severe nausea for 1-2 weeks	1-2 weeks	2-3 weeks	2-3 weeks
Expected Weight Loss	10-20kg	50% Excess weight	60% Excess weight	70-75% Excess weight
Long Term Effects	Short term only – max 6 months. Weight gain likely on removal of Balloon	Band adjustments necessary for weight loss. Dietary and lifestyle control necessary for success	Loss of restriction in 15% with weight regain. Dietary and lifestyle control necessary for success	Restriction decreases after 1 year to stabilise weight loss. Early satiety continues. Dumping may fade after 1 year. Dietary and lifestyle control necessary for success
Long Term Problems	Weight regain	Band Failure 1 in 20 'flipped port' 1 in 50 Slippage 1 in 50 Erosion up to 25% at 15 years Band removal up to 25% at 15 years Inadequate weight loss or weight regain. Malnutrition if dietary advice not followed	Loss of restriction Return of appetite Further surgery needed to maintain weight loss Inadequate weight loss or weight regain Malnutrition if dietary advice not followed	Nutritional deficiency (Iron, Calcium, Vitamins) Internal hernia / Adhesion problems. Inadequate weight loss or weight regain Malnutrition if dietary advice not followed or if supplements not taken 1 in 10 bile acid reflux (mini bypass only)
Dietary Supplements	None	Multivitamin and mineral supplement for first year. Vitamin D supplementation may be required	Multivitamin and mineral supplement containing iron for first year. Lifelong calcium and vitamin D supplementation	Multivitamin and mineral supplement for life. Lifelong calcium and vitamin D and iron supplementation. Lifelong vitamin B12 injection.
Which patients?	Those needing experience of the post-op diet before having definitive weight loss surgery	Tendency to eat large portions, less likely to eat high calorie snacks regularly. BMI less than 50 Those wanting or needing a low risk procedure e.g. older patients	Tendency to eat large portions, less likely to eat high calorie snacks regularly. Not suitable for patients with acid reflux Any BMI Those needing a lower risk procedure than bypass	Tendency towards snacking between meals, especially sweet-eaters. Patients with acid reflux. Any BMI Type 2 Diabetes GORD (Roux en y bypass only)

Please read this contract carefully.
If anything is not clear please contact
Jane Calow, Bariatric Specialist Dietitian
on 0116 258 5400 to discuss your concerns.
Once you are happy with this please sign both copies, keep one for your own use and hand the other in at Clinic Reception. Once we have received your signed contract we will add you to the waiting list for surgery.

address label

☐ The risks, benefits and complications and expected outcome of surgery have been explained to me. I understand and accept these.

☐ I have been given copies of the procedure booklet and the diet after surgery booklet.

☐ I will continue to attend the Primary Care Specialist Weight Management Clinic whilst on the waiting list. **I understand that if I gain 5kg or more weight during this time my surgery will not take place until I have lost this weight.**

☐ I will follow the pre-operative diet for …….. days before surgery. **I understand that if I do not follow the pre-operative diet it is likely that my operation will not take place.**

☐ I will follow the post-operative diet and practice good eating habits. I understand that if I do not follow the post-operative diet I may develop health problems due to poor nutrition, fail to lose significant weight, or regain weight.

☐ I will take vitamins and calcium as recommended (lifelong after gastric bypass)

☐ I will attend all appointments with the dietitian, nurse or surgeon as required. If I am unable to attend due to illness or special circumstances I will give as much notice of cancellation as possible.

☐ I will undertake any actions required e.g. obtaining blood tests before appointments or completing food diaries if requested.

☐ I will ask for help or clarification if I need it.

☐ I agree to my data being used for audit and evaluation of the obesity service to inform where improvements are necessary.

The Obesity Service will

- Be available to answer any questions or deal with problems by telephone (Bariatric Specialist Dietitian contact details available in patient booklets).
- Take account of your wishes and circumstances when scheduling clinic appointments where possible.
- Try to give you notice if appointments have to be rescheduled. Please note that this is not always practical.

Signed (Patient)…… Date…….

Signed (Consultant Surgeon)…… Date……

The meeting is held monthly on the first Thursday afternoon of each month from 3.15pm onwards in the Radiology Seminar Room, Windsor Building, level 2 LRI. Staff can liaise with the surgical secretaries to check meeting details.

The Bariatric Specialist Dietitian should request medical case notes in advance via the General Surgery Clinical Coordinators team for all patients they wish to discuss and take these to the meeting. This will include medical notes for

- patients who have been listed for bariatric surgery
- patients for whom the wider MDT input is needed to decide the appropriate course of action or treatment to be offered

It may include medical notes for patients under review by the Primary Care Specialist Weight Management Dietitian.

The Bariatric Specialist Dietitian will discuss any primary care, pre-op or post-op patients for whom a concern has been identified.

At the MDT meeting the team will discuss each case and an action plan will be devised. The outcome will be recorded in the medical case notes by a Bariatric Consultant Surgeon who will dictate a letter if necessary.

The Bariatric Specialist Dietitian is responsible for recording actions agreed on the “Bariatric Nurse and Dietitian" spreadsheet on the Bariatric Drive and for ensuring requests for post-meeting actions such as booking patients to clinic are undertaken.

(HISS clinic code DIETABT)

The Bariatric Specialist Dietitian orders blood tests

1. Pre surgery when patients are listed for bariatric surgery to assess baseline micronutrient status (see Appendix 2 and 18)
2. Pre surgery when assessing suitability for prescription of Saxenda (see Appendix 7)
3. Post-surgery to assess nutrient status (Appendix 15 and 16)

Where blood forms are given to a patient in clinic or posted the Bariatric Specialist Dietitian should add the patients name and details to the Bloods Ordered spreadsheet (in the folder Jane Calow on the LNDS shared drive). This should include a date to review the results.

Timescales for reviewing results

Allow 2-4 weeks after posting blood forms for patients to book and attend a blood test with their GP practice.

Allow an additional 4 weeks for micronutrient blood tests and 1-2 weeks for HbA1c, fasting blood glucose and lipids to return from the lab.

Procedure

The Bariatric Specialist Dietitian should email the Dietetic Admin Team using the HISS clinic request form to request a clinic booking in DIETABT clinic (Wednesday, Thursday or Friday afternoons).

In the clinic the Bariatric Specialist Dietitian should review the latest letter on Dictate3 and view the blood results. They should telephone the patient to discuss.

Where abnormal results are seen pre-surgery the Bariatric Specialist Dietitian should

1. dictate a letter to the GP (copied to the patient) recommending vitamin supplements be started to correct deficiencies whilst the patient waits for surgery **OR**
2. dictate a letter to the GP (copied to the patient) explaining that the patient will be booked to attend the Saxenda joint clinic or return to standard dietetic telephone review as appropriate
3. Highlight results that the GP may wish to investigate further e.g. CRP, Abnormal full blood count results other than haemoglobin, abnormal blood glucose or lipid results.
4. Blood tests requested and the date these were actioned should be recorded on the Bloods ordered spreadsheet. Completed results should be highlighted in green.

(HISS clinic code JCDWOB)

Patients listed for bariatric surgery may be suitable for prescription of Saxenda injectable medication for weight loss whilst they wait. The joint clinic is led by the Bariatric Specialist Dietitian and Dr David Webb, Consultant in Diabetes and Endocrinology.

The NICE criteria for prescription are

1. HbA1c 42-47 mmol (impaired glucose tolerance) PLUS
2. Cardiovascular risk factor i.e. Sleep apnoea, hypertension or cholesterol > 5mmol.
3. No history of pancreatitis.

The Bariatric Specialist Dietitian is responsible for screening patients listed for surgery to determine whether they meet the criteria for prescription and for booking suitable patients to attend the joint clinic. The Bariatric Specialist Dietitian should

1. Add the names of patients listed for surgery in Bariatric Clinic to a spreadsheet, to include date listed and whether they meet the criteria for prescribing.
2. Discuss with suitable patients (either when listed or at a dietetic review) whether they would like to attend the joint clinic to discuss Saxenda.
3. Where there are no blood tests within the last 6 months, send blood forms to retest HbA1c, fasting glucose and lipid profile.
4. Ask the patient if they have previously had pancreatitis.

The Bariatric Specialist Dietitian should review the blood test results in the virtual clinic (see Appendix 6) and dictate a letter within 24 hours outlining results and recommended action to the GP (copied to the patient and to the Diabetes Consultant).

Where the results indicate a potential new diagnosis of diabetes (fasting blood glucose > 7mmol, HbA1c > 11mmol) the Bariatric Specialist Dietitian should highlight these concerns to the GP for further investigation.

Where patients meet the criteria for prescription and are interested in this option the Bariatric Specialist Dietitian should request a face to face appointment in JCDWOB clinic to discuss Saxenda.

Patients with known diabetes can also be booked to the clinic. The Diabetes doctor will recommend any changes to medication as appropriate.

Where patients do not meet the criteria or decline the option of Saxenda they should be booked to standard dietetic follow-up clinic (HISS code NUROB) See Appendix 8.

(HISS clinic code NUROB)

Where there is a long wait for surgery (more than 3 months) patients waiting for a bariatric operation are at risk of gaining weight and not adhering to the recommended diet and lifestyle. They sign a contract which requires them to continue the healthy behaviours and to remain at a weight of no more than 5kg above the weight at which they were listed for surgery.

The Bariatric Specialist Dietitian should book a review ideally at least once every 3 months whilst patients are on the waiting list. Some patients who previously had private surgery and have been listed for revision will need to develop the required healthy behaviours once they are listed.

Patients are booked and medical case notes provided by General Surgery Clinic Coordinators.

The purpose of the review is

1. To ensure patients remain weight stable whilst waiting for surgery
2. To ensure they continue to eat smaller portions and snacks every 2-3 hours
3. To advise on how to improve lifestyle behaviours where patients have not previously adhered to this regime or where weight gain is seen.

The Bariatric Specialist Dietitian should check medical notes and letters on Dic3 for details of when the patient was listed for surgery. During the appointment

1. Obtain a current weight (weight the patient who attends face to face or ask patients who have telephone review) and compare this with the weight at which they were listed.
2. Ask the patient to describe a typical days eating.
3. Assess whether the patient is eating every 2-3 hours.
4. Assess whether they are eating smaller portions (this should go with eating more often to avoid weight gain)
5. Advise on suitable fibre or protein snacks containing 100 kcals or less (portion of fruit, small cereal bar, small pot yogurt, 25g hard cheese or mini cheese portion, 1 hard-boiled egg, 2 slices cold meat, 10-15g plain nuts)
6. Discourage low calorie crisps, chocolate, biscuits or other highly processed snacks which may contain similar calories but do not increase satiety or provide important nutrients.
7. Encourage patients to serve smaller meals (use a smaller plate to serve food, save some food for another occasion, slow speed of eating or stop eating half way through a meal and assess satiety, make meals last 20 minutes for satiety to occur.)
8. Where people are struggling to maintain these eating behaviours encourage them to keep a food diary or use an app such as Nutracheck or myfitnesspal to input all intake. Recommend they record what, when and how much they ate, make comments on progress and their mood or environment at the time of eating. Comments should be reviewed weekly and plans made for further small improvements to lifestyle as a result.
9. Encourage patients to increase exercise where possible.
10. Assess barriers to change or to maintaining healthy lifestyle behaviours and encourage the patient to obtain support from those around them or discuss where they could obtain additional support e.g. GP or practice nurse for health issues.
11. Where abnormal micronutrient status has been identified the Bariatric Specialist Dietitian should check compliance with recommendations for vitamin and mineral supplements and arrange further blood testing after three months compliance (see Appendix 6).

If patients have questions about their procedure or the post-operative diet recommended the Bariatric Specialist Dietitian should refer to “Getting the Best out of Bariatric Surgery” and “ A Guide to weight loss procedures” (available on YourHealth – Leicester’s Hospital patient information website by typing “bariatric” into the search box).

If they wish to change the procedure they are listed for the Bariatric Specialist Dietitian should discuss this at Bariatric MDT (see Appendix 5).

(HISS clinic code NUROB1)

All patients wishing to be considered for bariatric surgery must have completed a Specialist Weight Management (Tier 3) programme. Some patients referred to UHL from outside of LLR have not completed this. Referrals from UHL or other Consultants or from out of area GPs are booked to a clinic held on the 4th Friday morning of the month.

Appointments are booked and medical notes provided by General Surgery Clinic Coordinators. New patients are booked for 60 minutes and follow-ups for 30 minutes.

New patients
The Bariatric Specialist Dietitian should collect information on the following from the referral and from the patient
1. Medical conditions and medication taken.

Where the patient is not diagnosed with sleep apnoea the Bariatric Specialist Dietitian should screen for this using the STOPBang Tool (Appendix 10). If the score is 5 or above the Bariatric Specialist Dietitian should dictate a letter to Sleep Clinic, Leicester General Hospital, requesting further investigation for a patient under consideration for bariatric surgery and including weight, height, BMI and STOPBang score.

2. Current weight, height and BMI
3. Weight history, highest weight, target weight
4. Previous attempts at weight loss and outcomes of these
5. Current eating habits (typical day) and factors affecting this
6. Activity and exercise undertaken
7. Social circumstances, employment, support networks
8. Treatment options they wish to consider (not all patients referred will want to consider surgery).

The Bariatric Specialist Dietitian should explain what support the clinic offers and how eating regular meals and snacks within a calorie controlled plan can promote weight loss and help people to prepare for bariatric surgery.

The Bariatric Specialist Dietitian should estimate energy requirements using the Mifflin St Jeour equation, negotiate a calorie target with the patient based on a 600-1000 kcal calorie deficit and provide a regular eating plan to suit the patient. Plans can include lower carbohydrate diets, replacing meals with shakes or calorie counted ready meal options, or intermittent fasting for people who do not wish to consider surgery.

The Bariatric Specialist Dietitian should encourage the patient to keep a food diary or input all food intake to an app and to adopt habits to help them maintain their healthier lifestyle (see Appendix 8).

The Bariatric Specialist Dietitian should book a follow-up appointment in 2 months and dictate a letter covering all the points discussed to the GP, patient and referring consultant where appropriate.

Follow-up patients
Follow the plan in Appendix 8 points 1-10

Sleep Apnoea- STOP-BANG	Yes	No
Snoring Do you snore loudly? (Heard through a closed door)	☐	☐
Tired Do you often feel tired or sleepy during the daytime?	☐	☐
Observed Has anyone observed you stop breathing in your sleep?	☐	☐
***Blood* Pressure** Do you have, or are you treated for high blood pressure?	☐	☐
Body Mass Index >35 kg/m^2	☐	☐
Age >50?	☐	☐
Neck Circumference > 40 cm?	☐	☐
Gender male?	☐	☐

Total score ☐

Score ≥ 5 = high risk for sleep apnoea. Refer to Sleep Clinic

2-3 weeks before the patient is due to have surgery they attend a surgical pre-assessment clinic led by the Pre-assessment Nurse. The aim is to ensure patients are medically fit for their procedure and that they understand the advice given about preparing for their surgery. The Bariatric Specialist Dietitian should telephone the patient 2 weeks before their surgery date.

The aims of the dietetic telephone review are:-

1. To ensure patients understand and are prepared for or are following the pre-operative diet
2. To ensure patients understand the post-op diet and are prepared for this

Recommendations for the Dietitian reviewing patients at pre-operative assessment stage
(refer to pre-op dietary information in "Getting the Best out of Bariatric Surgery")

Pre-operative diet

If the patient is not following the pre-op diet (when there are less than 7 days before surgery left), warn them that their surgery may not go ahead because their liver will be too large. If they follow the diet but eat one normal meal the night before surgery, they will undo all the effect of the pre-op diet.

Ask patients if they have any concerns about following the pre-operative diet.

Encourage

- eating every 2-3 hours to manage hunger
- weighing of meat and starch portions
- extra vegetables and salads and 1 extra fruit portion daily if needed to manage appetite
- Using a SlimFast shake or 350kcal ready meal to replace a main meal if required

Discourage

- fizzy drinks
- drinking with meals
- taking SlimFast only (no food) on the pre-operative diet, unless patient has previously successfully taken milkshakes only for several weeks

Patients with diabetes may need less insulin from when they start the pre-op diet, however many will not experience hypoglycaemia when reducing food intake due to insulin resistance. They can visit their GP or Practice/Diabetes Specialist Nurse for advice on amending medication if required.

Post-operative diet

Encourage

- Buying a wide variety of flavours of Complan, SlimFast or other high protein drinks
- Having skimmed milk powder and neutral flavour high protein powder available. Fatigue with commercial flavours is very common
- Planning to follow the recipes given (encourage experimentation before surgery) for homemade soups and shakes, particularly if milk or lactose intolerant (see below)

Discourage

- Planning for ordinary soups or smoothies without adding protein powder

If the patient does not like milk or milky drinks or is milk or lactose intolerant, provide information about using fruit smoothies and soups plus a suitable neutral flavour protein powder to achieve minimum 15g protein per 200mls (equivalent to SlimFast/Complan). Other options such as protein shots or protein flavoured water may be useful. See "Getting the Best out of Bariatric Surgery").

The Bariatric Specialist Dietitian should check ORMIS (contact IT to gain access) for operation dates for bariatric patients. Visit the ward 1 day after surgery (gastric banding, gastric balloon) or 1-2 days after surgery (gastric bypass, sleeve gastrectomy) where possible. See "Getting the Best out of Bariatric Surgery" and Appendix 13. Gastric bypass/sleeve gastrectomy post-operative pathway. Ensure a copy of this pathway is clipped to the front inside cover of the medical case notes.

After surgery patients should aim to :-

- establish a regular fluid intake to achieve 1500-2000mls daily as soon as possible
- take high protein drinks 50mls/hour plus 50mls/hour clear fluid
- learn to recognise the sensation of the stomach pouch containing fluid

NB. Recommended high protein drinks include over the counter Complan or Slimfast powder made up with milk to achieve adequate protein intakes. Prescribable options are not required, except for patients with milk or lactose intolerance (see below).

Recommendations for the Dietitian reviewing peri-operative patients

1. Read the medical notes for most recent recommendations and discharge plans.
2. **Assess fluid intake** against the Complan regime.
3. Ensure the ward have several flavours of Complan available including savoury options.
4. Many patients are anxious and need reassurance at this stage. **Encourage**:-
   - sipping slowly during all waking hours
   - waiting between mouthfuls to assess whether they can feel fluid in the stomach pouch.
5. Warn patients that failure to drink adequate fluids results in dehydration and constipation.
6. **For Milk intolerance**, devise an alternative fluid regime that meets protein requirements (Appendix 19) and contains 600-800 kcals. In hospital this can include a combination of suitable prescribable dietary supplements such as Fortijuce. The patient should use protein water and suitable protein powders in soups and smoothies after discharge (See "Getting the Best out of Bariatric Surgery").
7. **Lactose intolerance** - prescribe Fortisip bottle or other prescribable supplements for the hospital stay. Patients should make lactose-free soups and shakes using a suitable protein powder at home. (See "Getting the Best out of Bariatric Surgery")
8. **Check medications** prescribed and ensure patients are discharged with Forceval soluble after gastric bypass.
9. After bypass and sleeve patients also require Dalteparin and Lansoprazole fasttab. All medicines should be prescribed in suitable formulations (see Appendix 13. Gastric bypass sleeve gastrectomy postoperative pathway).

Patients admitted for insertion of a gastric balloon.

The procedure is undertaken in Endoscopy. Visit the patient on Day 1 after the procedure (check Nerve Centre for location). See the advice booklet "A Guide to Weight loss procedures (bariatric surgery)"

Encourage

- Sipping fluids slowly as tolerated whilst initial nausea persists to achieve 1500-2000mls
- Moving onto softer foods and normal textured foods as tolerated once nausea subsides

Discourage

- Drinking less than 1500mls daily
- Drinking non-nutritive fluids only for more than the first few days to avoid lethargy

OBSERVATIONS
Record observations every hour for 8 hours **THEN** every 2 hours as a minimum

ACTIVITY
Get out of bed within 2 hours of returning to ward
Walk around the ward every hour during the day.
Ensure head of bed is greater than 30 degrees
Flexion/ extension exercises every hour while awake for prevention of DVT

DIET
Operation day – 60mls clear/coloured fluids/hour,
Day 1- Commence Complan regime (see ward chart)

MEDICATION
Ensure patient is prescribed liquid medication
Dalteparin 5000 units daily while in hospital. To continue for 2 weeks after discharge
Regular Ondansetron Sublingual
Lansoprazole Fastabs 30mg daily. To continue for 6 weeks after discharge
Forceval Soluble daily (For Gastric Bypass Patients only). This needs to be taken lifelong
Appropriate analgesia – avoid opiates

PATIENT CARE
Remove NG Tube and Urinary Catheter at end of procedure
Strict intake and output every 4 hours
Wound drain to stay until day of discharge
NGT removed at end of procedure unless having CPAP
Urinary catheter to be removed at end of procedure
Administer oxygen if required
Maintain SPO2 above 92%
Cough and deep breathe every hour while awake
If Diabetic monitor BM's every 2 hours
Ensure VTE stockings are worn daily
AVOID CPAP IN FIRST 48HOURS POST OPERATIVELY. IF CPAP NECESSARY RETAIN NGT FOR 48HOURS
Ensure EWS is recorded within 2 hours prior to discharge and is <2

INVESTIGATIONS
Post op bloods on day 1

REFERRALS
Refer to physiotherapist first day post op
If Diabetic review by Diabetic Team prior to discharge

DISCHARGE
If patient is well discharge home on Day 2-3 post op. Complete the checklist below
□ Prescribe Dalteparin 5000 units or prophylactic dose of low molecular weight heparin for 14 days post-op
□ Prescribe Lansoprazole oro-dispersible 30mg once daily and ask GP to continue for 6 weeks post-op
□ Check all medicines are soluble, liquid, injectable or crushable
□ Gastric bypass patients are prescribed Forceval soluble multivitamins once daily with request to GP to continue for 6 weeks then change to capsule form.

Normally patients feel uncomfortable Day 1 postoperatively. Following this the Left Upper Quadrant (LUQ) port site is always painful. The rest of the abdomen is usually pain free. Warning signs are subtle when building up fluids: Pyrexia, unexplained tachycardia, pain away from the LUQ port site requiring increase in opiates. **IF ANY OF THESE SIGNS ARE PRESENT CONTACT A SENIOR MEMBER OF THE BARIATRIC TEAM FOR URGENT REVIEW. CONSIDER BLOOD GASES**

Purpose

- To ensure compliance with the recommended dietary regime
- To ensure patients are taking fluids including protein shakes or fortified soups every hour
- To ensure that patients are drinking enough to prevent dehydration
- To ensure patients understand the Stage 2. soft diet advice

Recommendations for the Dietitian for first contact after surgery

1. **Telephone** the patient in the first 10-14 days after surgery
2. **Assess** eating and drinking patterns, vitamins taken, bowel habits, signs of dehydration
3. **Encourage** patients who are not taking **fluids** as recommended to follow the regimes given for weeks 1-4 after surgery as closely as possible, regardless of appetite (see "Getting the Best out of Bariatric Surgery") and explain that:-
    - the regular meal pattern is key to managing hunger once appetite returns
    - inadequate protein intake will delay healing and return to normal activities
    - inadequate fluid intake will lead to dehydration and constipation
    - If unable to tolerate the recommended amount of fluid, stop when full and continue with the next drink on the chart
    - Choosing a wide range of flavours is key to maintaining adequate fluid intakes
    - Expect taste changes after surgery (many people prefer savoury to sweet flavours)
4. Remind patients who are taking mainly non-protein containing fluids, unfortified soups and smoothies of the importance of adding **protein** for adequate nourishment.
5. **Ensure** any **multivitamins** taken are those recommended in "Getting the Best out of Bariatric Surgery.
    - Commencing multivitamins can be delayed until the soft food stage for patients taking mostly Slimfast, Complan or equivalent.
    - Commencing calcium supplements can be delayed until the first clinic visit for patients taking mostly milky drinks.
6. Signpost patients to "Getting the Best out of Bariatric Surgery" for advice on managing **common problems** such as constipation.
7. **Reassure** patients that general **aches and pains** are normal when increasing daily activity after major surgery. If problems persist they should visit their GP. See "Getting the Best out of Bariatric Surgery" for advice on common problems experienced.
8. If patients have advanced their diet beyond the fluid stage, advise them that:-
    - it is not recommended to start soft food before week 5
    - eating solid (dry, chewy, textured) food before 7 week after surgery is not recommended due to the risk of disrupting staple lines or sutures.
9. Discuss practical ideas for **soft moist foods**. (See "Getting the Best out of Bariatric Surgery").
10. Arrange a suitable date for first **follow-up** appointment (Appendix 15). Offer the patient a date scheduled for 8-9 weeks post-op according to the next available clinic date (see below) and send an email request to clinic coordinators (or telephone x7574) to book this.

After gastric banding

- The first band adjustment is organised by Radiology. Patients can ring Radiology appointments patients line 0116 258 8765 to ask when their appointment will be.
- Patients often feel they have little or no restriction at 2-4 weeks as fluids pass straight through the unadjusted band. If patients are already on 6 x 200mls shakes they can transfer to soft food after 3 weeks if necessary to help manage appetite. Restriction improves once the patient is eating textured foods and once the band is correctly adjusted.

Procedure (HISS clinic code obndfu)

This clinic is led by the Bariatric Specialist Dietitian. Patients are booked into the joint clinic 8-9 weeks after surgery and attendance is organised by the Bariatric Specialist Dietitian. Clinics are held once monthly, usually on the 3rd Thursday morning of the month at 9.00am in Jarvis Clinic A, LRI. Patient medical notes are provided by Clinic Coordinators. Ensure the room is suitable for bariatric patients i.e. close to the Bariatric weighing scales in Jarvis Clinic A and with the bariatric chair present.

Purpose

To monitor patients' progress after surgery including:-

- rate of weight loss, wound healing, pain, exercise, change in co-morbidities and medication
- eating habits, fluid intake, bowel habit, dietary adequacy, taking vitamins

To make recommendations for progress over the next 4 months.

Recommendations for the Dietitian in obndfu clinic (post-surgery patients)

1. **Weigh** the patient on Jarvis Clinic Obesity scales. Average weight loss is 10-15kg at this stage.
2. **Complete** the obndfu Checklist (see purple bariatric pathway) during the consultation.
3. **Document** medication taken, compliance with proton-pump inhibitors, change in comorbidities. If appropriate advise patients to monitor blood glucose and blood pressure more frequently or seek GP advice.
4. If the patient has concerns about **wound healing** or possible hernia they should be encouraged to report these to their GP within 24 hours. The Bariatric Specialist Dietitian can ask clinic nursing staff to examine the wounds if staff resources permit this.
5. The Bariatric Specialist Dietitian should **assess**:-
   - daily food intake particularly eating patterns and protein
   - any micronutrient supplements taken
6. Where **protein intake** is inadequate advise on increasing milk and other protein foods.
7. **Compliance**: Where a patient is not eating every 2-3 hours or not taking recommended vitamins give advice according to "Getting the Best out of Bariatric Surgery".
8. Patients may remain on **soft** foods for longer than the 4 weeks recommended if they wish, until they are confident they can move on to solid foods.
9. Where patients are experiencing **problems** refer to "Getting the Best out of Bariatric Surgery" Troubleshooting section or Things to look out for.
10. **Symptoms**: If the patient is experiencing pain, discomfort or vomiting after eating only small amounts or can only take fluids or soft food without vomiting after 8 weeks, the Dietitian may seek advice from the Upper GI surgeon on call.
11. For gastric band patients see Appendix 21 Adjustment of Gastric Bands
12. Check **bloods** (haematinics, FBC plus any parameters that were abnormal pre-surgery).
13. Request a further appointment in Dietetic follow-up clinic (HISS code nurob) in four months.
14. Dictate a letter to the GP outlining progress and requesting prescriptions for vitamin and mineral supplements as necessary.

The main points at this stage are:

- To identify and manage any problems such as vomiting, pain, altered bowel habit
- To check what stage of diet the patient has reached and advise on when to advance this
- To review progress following any band adjustment and current level of restriction on eating
- To ensure an appropriate rate of weight loss
- To ensure a regular meal pattern with three meals and three snacks daily is established
- To ensure the patient takes a nutritionally adequate diet and advise on how to meet individual protein requirements
- To ensure adequate vitamin and mineral supplementation

Procedure (HISS clinic code nurob, annual review clinic code usbjc)
The clinic is held in Jarvis Clinic A, LRI usually on Wednesday or Thursday mornings starting at 9 am. Patient medical notes are provided by Clinic Coordinators. Arrive 5 minutes early and ask clinic nursing staff which room you have been allocated. The Bariatric chair is not required unless there are patients known to weigh over 150kg attending the clinic.

Purpose

- To monitor rate of weight loss
- To ensure the patient takes a nutritionally adequate diet
- To ensure compliance with recommended vitamin supplementation and blood testing
- To encourage the development of habits needed to promote steady weight loss and weight maintenance in the long term
- To identify any problems and advise on management or refer back to the Consultant and GP

Recommendations for the Dietitian in Dietetic follow-up clinic (post surgery patients)
1. **Weigh** the patient on the obesity scales in Jarvis Clinic A, LRI and document this in medical case notes (use purple bariatric pathway if available).
2. **Assess** weight loss, current diet, exercise, vitamins taken and any blood test results. The Checklist for Dietetic follow-up post weight loss surgery (Appendix 17) gives guidance as to the topics to cover. Not all topics will be needed for every patient. If this is completed it should be filed in the medical notes.
3. **Weight loss**: Give positive feedback if there has been weight loss. Identify reasons for little or no weight loss. Calculate the expected weight loss for the procedure at 2 years (Appendix 20) and use this to reassure patients who are dissatisfied with their weight loss. Encourage a focus on total not rate of weight loss.
4. **Diet**: Assess diet against the long term habits which promote weight loss ie.
    - Eat meals and snacks every 2-3 hours
    - Choose textured food instead of processed, sloppy, soft or crispy foods where possible
    - Serve main meals on a teaplate
    - Eat protein first at meals, vegetables or salad second and starchy foods only if they have room after these
    - Choose low fat low sugar options

(see “Getting the Best out of Bariatric Surgery”).
Remind patients not adhering to the advice given that it becomes easier to overeat after the first 1-2 years after surgery so it is important to develop good habits early on. The risks of failure to adhere to these behaviours are poor nutritional status, inadequate weight loss or weight regain.
5. **Assess** whether patients with gastric bands have adequate restriction. (see Appendix 24 for appropriate action if not).
6. Where patients are experiencing **problems** refer to “Getting the Best out of Bariatric Surgery” Troubleshooting section or Things to look out for.
7. **Exercise**: Assess whether the patient has increased exercise since before their surgery and recommend increasing this for optimum weight loss, preservation of muscle mass and bone health.
8. **Vitamins and minerals**: Assess any micronutrient supplements taken and if necessary give advice as per “Getting the Best out of Bariatric Surgery”
9. **Blood tests**: Refer to the schedule in BOMSS Guidelines on biochemical monitoring and micronutrient replacement. The Bariatric Specialist Dietitian should give or post blood forms for the patient to have samples taken at LRI or at their GP practice 4-6 weeks prior to their next appointment.
Complete 2 blood forms per patient, each with an address label, type of surgery in “Clinical Details” and Jarvis Clinic, LRI plus the name of the Consultant Surgeon who performed the operation under “Requesting location”. Use blood test ordering stickers Appendix 18.

10. If the patient has not had bloods taken before the appointment these should be ordered at the appointment
11. If any blood results are abnormal the next appointment should be scheduled for 3-6 months time and blood forms should be given out or posted for the abnormal results to be retested before the next appointment.
12. If results are within normal limits the next appointment can be scheduled according to the standard follow-up schedule (2, 6, 12 and 24 month reviews).
13. Dictate a letter to the GP copied to the patient outlining the main points discussed, requesting any changes to vitamin prescriptions required and other action points, on Dic3.

After the clinic
14. Where blood tests have been ordered, update the Bloods Ordered spreadsheet. Book an appointment to review these in the virtual blood results clinic (DIETABT). See Appendix 6.
15. Where patients do not attend (DNA) see Appendix 25.

Annual review clinic
For patients due for annual review at 1 or 2 years post-op use the blue clinic outcomes sheet on the front of the notes to request they are booked into usbjc clinic held once monthly, usually on the second Friday of the month. At the annual review appointment ask the patient about improvement in co-morbidities and document in the purple bariatric pathway using the table provided. The rest of the review is as described above.

Discharge
See Appendix 26.

Address label

Clinic date / /

Weight **kg**
BMI **kg/m²**

Weight at surgery kg
Ideal weight (BMI 25) kg
Expected eventual weight kg

Procedure □ gastric bypass □ sleeve gastrectomy □ gastric banding

Date of surgery / / **Time since surgery** months

Total **weight loss** so far.....kg at…….months.
Any concerns about rate of weight loss?

Diet

Typical days eating

Are you eating **regular meals** and snacks every 2-3 hours?
□ breakfast □ midday □ evening Number of between meal snacks……

What texture of food are you taking? □ fluids □ purees □ soft □ normal

portion sizes ……. dessertspoons eaten **or** what fraction of a teaplate ……..

(check proportions against diagram on cover of "Getting the Best out of Bariatric Surgery")
Are recommended **proportions** eaten? □ Yes □ No

Are they eating a **balanced diet?**	Recommended	**frequency/portions eaten per day**
starchy foods	1-3 servings daily	
protein foods	2 servings daily	
fruit and vegetables	2-4 servings daily	
dairy foods	3 servings daily	
fatty and sugary foods	minimal	

Any concerns?

Any eating problems?	**Detail / frequency**
vomiting	
discomfort/pain on eating	
constipation/diarrhoea	
other……	

Are there any **foods you cannot eat?**
List 1.
2.
3.

for **banding** patients is there
□ inadequate restriction □ excessive restriction? (Check if diet is adequate)
Date of last band adjustment……(search on ICE and read report)

for **bypass** patients is there any dumping syndrome? □ Yes □ No
If yes, frequency per day/week/month
Caused by which foods/drinks? a. b.

Are there any taste changes? □ Yes □ No
Which foods affected?.....

Does anything make it difficult to follow the diet recommended? □ Yes □ No
a.
b.
c.

Exercise

Any increase in exercise since pre-op? □ No □ Some increase □ Significant increase

What activity do you do How long for Frequency
1.
2.
3.

Any plans to increase exercise?

Vitamins

Do you take **supplements?** □ Daily □ Intermittently □ None

Multivitamin/mineral □ Yes □ No Name……How many daily?.....

Calcium □ Yes □ No Name……tablet size……..mg
Frequency……daily? Does your calcium supplement contain **vitamin D**? □ Yes □ No

Iron □ Yes □ No □ NA Name…… Frequency……daily?

Vitamin B12 injection □ Yes □ No □ NA Every ……weeks

Other vitamin supplement (previous recommendations may include cod liver oil, brazil nuts)

After all appointments
□ Check blood results (see below) and/or

□ Give patient blood forms for testing before the next appointment according to the schedule in BOMSS Guidelines on biochemical monitoring and micronutrient replacement

At 12 month and subsequent annual reviews
□ Complete the co-morbidity review using the table in the purple bariatric pathway

Blood test results
□ bloods not taken □ results not available
□ Check blood results. Tick any concerns

□ Total protein	□ Adjusted calcium		□ vitamin D……..	□ CRP
□ Selenium	□ Zinc		□ vitamin A	□ vitamin E
□ Hb	□ Ferritin	□ MCV	□ vitamin B12	□ folate

Action Plan **Details**

□ improve dietary balance
□ improve meal pattern
□ alter texture of foods eaten
□ alter portion sizes
□ alter eating speed/chewing
□ increase fluid intake

□ complete food diary and return by / /

□ increase exercise
□ continue as before

□ take supplements as recommended
□ take additional supplements 1.
2.
3.

□ request band adjustment
□ discuss at MDT

□ other……..

Follow-up when
Dietitian

Surgical clinic

…….. ……
Name of Dietitian Signature

U&E
FBC **Magnesium**
LFT **Vitamin D**
bone profile
CRP **Haematinics**
(blood sciences lab)

U&E
FBC **Magnesium**
LFT **Vitamin D**
bone profile
CRP **Haematinics**
(blood sciences lab)

U&E
FBC **Magnesium**
LFT **Vitamin D**
bone profile
CRP **Haematinics**
(blood sciences lab)

U&E
FBC **Magnesium**
LFT **Vitamin D**
bone profile
CRP **Haematinics**
(blood sciences lab)

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FBC **Magnesium**
LFT **Vitamin D**
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(blood sciences lab)

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(blood sciences lab)

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CRP **Haematinics**
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Copper
Zinc
Selenium
Vitamin A
Vitamin E

(Special Biochemistry lab)

Copper
Zinc
Selenium
Vitamin A
Vitamin E

(Special Biochemistry lab)

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(Special Biochemistry lab)

Fat stores protect against loss of muscle mass during weight loss. Protein requirements after surgery are based on ideal body weight (IBW) (Body Mass Index (BMI) 25).

A patient's weight at BMI 25 can be calculated using a BMI chart or if this is not available by using the formula

Ideal Body Weight = 25 x (height (m) ^{2})

Protein requirement = 1g per kg ideal body weight.

Example: Mrs A is 1.7 m tall:

IBW = 25 x (1.7 x 1.7) = 72 kg

Mrs A's protein requirement = 72g daily.

See also Appendix 22 Inadequate Protein Intake

Calculate IBW as shown in Appendix 15. Total excess weight is weight at surgery minus IBW. Calculate percentage excess weight loss and compare with the average weight loss for the procedure.

At 2 years after surgery average percentage excess weight loss is
70-75% after gastric bypass (may be up to 80% after single anastomosis gastric bypass).
60% after sleeve gastrectomy
50% after gastric banding

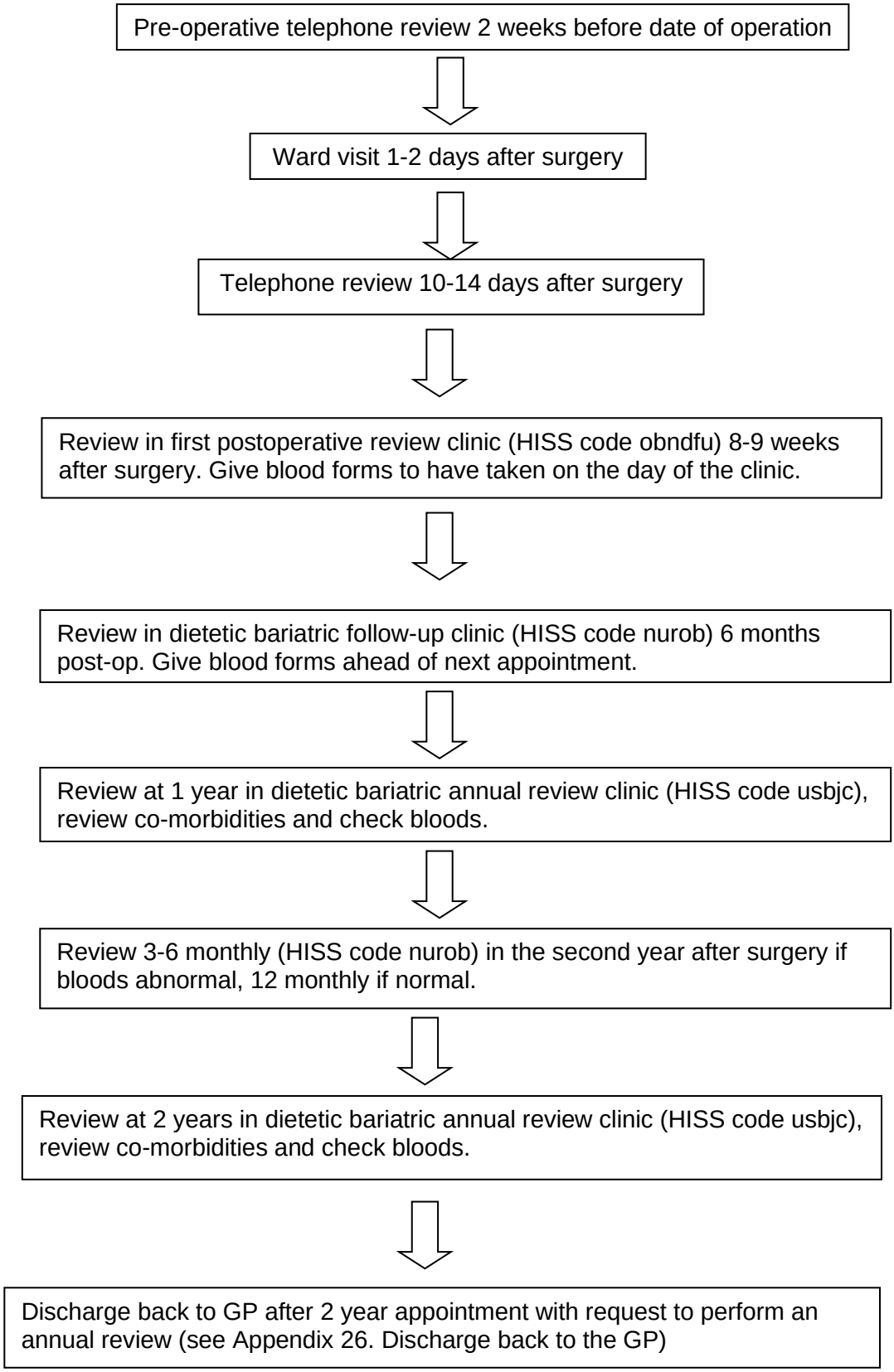
For example
Mrs B is 1.6m tall and her pre surgery weight is 150kg. At 2 years after sleeve gastrectomy she weighs 100kg and is disappointed she has not lost more weight.

IBW = (1.6 x 1.6) x 25 = 64.

Excess weight = 150 – 64 = 86kg. Weight lost 50kg.

$\frac{50}{86} \times 100 = 58\%$ excess weight loss

Conclusion: Mrs B has lost the expected amount of weight after sleeve gastrectomy. Her weight loss expectations may have been unrealistic. If there is no scope for dietary modification she can be encouraged to increase exercise to lose more weight.


Pre-operative telephone review 2 weeks before date of operation
Ward visit 1-2 days after surgery
Telephone review 10-14 days after surgery
Review in first postoperative review clinic (HISS code obndfu) 8-9 weeks after surgery. Give blood forms to have taken on the day of the clinic.
Review in dietetic bariatric follow-up clinic (HISS code nurob) 6 months post-op. Give blood forms ahead of next appointment.
Review at 1 year in dietetic bariatric annual review clinic (HISS code usbjc), review co-morbidities and check bloods.
Review 3-6 monthly (HISS code nurob) in the second year after surgery if bloods abnormal, 12 monthly if normal.
Review at 2 years in dietetic bariatric annual review clinic (HISS code usbjc), review co-morbidities and check bloods.
Discharge back to GP after 2 year appointment with request to perform an annual review (see Appendix 26. Discharge back to the GP)

Patients who do not like or do not tolerate milk

The diet immediately after surgery relies heavily on milk to ensure adequate protein intake. If a patient does not like or tolerate milk this should be identified before surgery and an individualised meal plan devised to meet requirements. Soya milk and yogurts can be useful. Other plant milk alternatives are not recommended due to the low protein content. In the first month encourage the patient to look for neutral flavour protein powders to add to soup and smoothies. Occasionally a patient who does not tolerate milk may require a non-milk supplement such as Fortijuce until they can eat a balanced diet. Monitor this closely to ensure patients do not take these for longer than necessary. If calcium intake is low as a result of taking little milk or calcium-fortified dairy products, ensure the patient takes a calcium supplement from the early stages (see (see "Getting the Best out of Bariatric Surgery" for advice on micronutrient supplementation).

Vomiting / Regurgitation

If patients report vomiting or pain / discomfort on eating this is usually regurgitation not vomiting. Regurgitation occurs soon after eating when patients eat too much, too fast and / or advance food texture too soon after surgery. It is often preceded by discomfort or pain due to overfilling the stomach pouch, which encourages the patient to stop eating. Symptoms then persist until either the food does move down the gut or the symptoms are relieved by regurgitation.

Re-emphasise the need to relearn eating style, concentrating on

- eating and drinking slowly
- waiting between sips or mouthfuls to allow the food bolus to reach the stomach pouch
- chewing food carefully
- stopping eating as soon as the stomach pouch is full
- avoiding drinking with meals

This is very difficult for many patients to do and regular reminders may be necessary.

Patients can be taught the 20:20:20:20 rule:

- Take a 20p piece sized mouthful of food
- Chew at least 20 times
- Wait 20 seconds between mouthfuls
- Take 20 minutes to eat your meal and then clear away any uneaten food

Patients may return to fluids if the problem is severe, and slowly rebuild the diet back to solids (ensure vomiting has stopped before advancing to the next stage). Many patients who have not established a regular eating pattern with three meals and three snacks to help manage hunger will describe regurgitation at times.

Patients may sometimes vomit and sometimes not (with the same foods). They may be eating too rapidly at times, for example after longer than 2-3 hours without eating, or feeling stressed or anxious (patients are not always aware of this). Vomiting may occur when the time since the last meal or snack was too short and the pouch was still full. Encourage patients to keep food diaries including detail of where they ate, the times of meals and snacks and the time taken to eat.

Persistent vomiting despite chewing thoroughly, eating slowly and choosing small portions may indicate the patient has a stricture. Discuss with a surgeon as soon as possible as an endoscopy with possible dilatation may be needed.

Patients with severe vomiting should return to the Stage 1 fluid regime and take 6 x 100mls Complan or Slimfast daily to ensure adequate nutrition. Advise them to visit their GP if needed. Review by telephone within 3-7 days. If there has been no improvement discuss with Consultant Surgeon on call as soon as possible as admission to hospital may be required.

Losing weight too rapidly

Patients often lose weight fairly rapidly in the first few weeks but this should slow down by 8-12 weeks and settle to 0.5-1kg per week by 4-6 months after surgery. There is no clear guidance on what rate of weight loss is too rapid. Patients tend to lose more rapidly after a bypass than after a sleeve or a band. Continued rapid weight loss may be due to

- inadequate diet
- continuing to vomit with several foods or with more than a few teaspoonfuls of food
- significant loss of appetite (particularly after gastric bypass) and struggling to eat regularly when not hungry

If any of the above are identified at the 8 week review appointment and weight loss is over 15kg since surgery, additional monitoring is required.

Encourage

1. eating and drinking very slowly
2. eating small amounts every 2-3 hours
3. continuing with milky drinks as snacks as long as necessary. Patients can supplement their diet with one or more milky drinks daily until food intake improves
4. keeping food diaries recording timings of meals, food type and quantity eaten regularly, until the Bariatric Specialist Dietitian judges the diet to be adequate

Review at least monthly by telephone or in clinic. If problems persist after two months discuss with the Consultant Surgeon who may arrange for further investigation such as an endoscopy to ensure the patient does not have e.g. a stricture.

Patients with gastric bands may lose weight too rapidly (i.e. more than 1kg per week) and report increased vomiting after band adjustment. Their band may be too tight and may need deflating. Contact the Consultant Surgeon on-call as soon as possible to report this (Appendix 23, 24).

Weight loss slowing down too soon

It is very common for patients to have unrealistically high expectations of the weight loss and the rate of weight loss that their procedure brings.

1. Calculate the percentage of excess weight that has been lost so far since the procedure and put the weight loss in context (see Appendix 20). A patient who has lost 30% of their excess weight in the first year after a band is on track to lose the average 50% of excess at 2 years
2. Reassure patients who worry that they have not lost weight for a few weeks. This is normal and the important detail is the total weight lost since the procedure

Slow weight loss or weight regain may be due to energy intake having increased above the amount needed for steady weight loss i.e. above 1000-1200 kcals. Possible causes are:-

- continuing on softer, easily managed foods instead of trying more difficult foods
- serving main meals from a dinner plate instead of the recommended teaplate
- continuing with milky drinks or SlimFast shakes between meals or eating easily managed high calorie snacks such as crisps and biscuits instead of low calorie snacks such as fruit

The effect is often that portion sizes increase too much and meals and snacks may be too energy-dense. If high calorie snacks are taken regularly this will slow down weight loss seen.

Encourage patients to:-

- choose more difficult but low calorie foods such as drier meat, bread, fruit and vegetables
- slow their rate of eating further to manage these which leads to eating smaller portions
- choose low fat, low sugar options wherever possible
- keep food diaries to identify eating issues and to demonstrate improvements made
- increase exercise to maintain steady weight loss over time. Patients who do not significantly increase activity levels from pre-operative levels are unlikely to lose as much weight and are at higher risk of regaining weight in the future, compared to those who do increase exercise

Inadequate protein intake
Assess protein intake against that recommended (see Appendix 19).
As meat is often difficult to manage after surgery patients may need regular encouragement to obtain sufficient protein. They should:-

- drink adequate milk (see "Getting the Best out of Bariatric Surgery")
- try alternatives such as fish, Quorn, eggs, pulses, cheese (and nuts if chewed carefully), which are generally better tolerated than meat
- continue to try softer, well cooked, corned or minced meats, eating slowly and chewing well. Grilled or roast meat and fish should be tolerated eventually even if they cause vomiting in the early stages.

Vitamin and mineral deficiency
After gastric bypass and sleeve gastrectomy, patients are advised to take their multivitamin and mineral and calcium supplements for life. After gastric banding, patients should continue with an over the counter multivitamin and mineral supplement and any vitamin D maintenance doses as required, however calcium supplements are not generally required.
(see BOMSS Guidelines on peri-operative and post-operative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery 2020).

Patients are unlikely to feel unwell for some months if they discontinue their vitamins so many do not continue to take these. At 2 years after surgery patients are discharged back to their GP and may not receive further reminders to take their vitamins and to have an annual nutritional blood screen.

Patients are warned of the dangers of failing to eat an adequate diet after their surgery, and are advised they will need to completely relearn their eating habits (as described above) before they are listed for an operation. Many are unprepared for the constant effort required and eventually return to their pre-surgery eating style. They may continue to eat a limited number of foods which are easily tolerated. Difficult foods include meat and protein and iron intakes may be low. Easy foods include all processed foods and most high calorie snacks and if patients rely heavily on these they may regain weight as well as developing protein and micronutrient deficiencies.

Gastric bypass reduces the absorption of iron, vitamin B12, calcium and vitamin D. The same is true of sleeve gastrectomy to a lesser extent. Iron and calcium require stomach acid for absorption which is only present in limited amounts after both bypass and sleeve gastrectomy. Bloods are tested annually after surgery and some vitamins and minerals may be below the normal range, even where patients are taking recommended multivitamin and minerals and iron and calcium supplements.

All patients should be strongly encouraged to take multivitamins and other supplements as recommended (see "Getting the Best out of Bariatric Surgery" for vitamin supplementation protocol). Patients with low levels of micronutrients need extra supplements. Consult the following table or see BOMSS Guidelines on peri-operative and post-operative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery September 2014 for more information:

Nutrient	Advice	Retest
Zinc	1 extra A-Z vitamin containing 100% RDA	3 months
Selenium	2 Brazil Nuts daily or 1 extra A-Z vitamin containing 100% RDA	3 months
Vitamin A	1 normal strength cod-liver oil capsule	3 months
Adjusted calcium	Increase dietary calcium from dairy foods. GP to consider increasing calcium and vitamin D supplement	GP to monitor
Vitamin D	Ask GP to advise according to standard protocol	6 months
Iron	Ask GP to advise according to standard protocol	GP to monitor

If unsure what action to take the Bariatric Specialist Dietitian should refer directly to a Consultant in Metabolic Medicine, LRI. Patients may present with vitamin deficiency several years after surgery but this can usually be prevented with regular monitoring.

Liaise with the Consultant Surgeon if in doubt. Patients are not reviewed by the Consultant Surgeon after surgery unless the Bariatric Specialist Dietitian identifies a problem. It is the Bariatric Specialist Dietitians responsibility to take these back to the Consultant Surgeon.

Prescription of multivitamin and mineral supplements

(see “Getting the Best out of Bariatric Surgery”)

The recommended multivitamin after gastric bypass is Forceval once daily for life (soluble for the first 6 weeks and capsule after this) . Where Forceval is unavailable or where the CCG will not prescribe this, patients should take 1 A-Z or 1 Centrum multivitamin instead. These have a better nutritional content than any other prescription or over the counter vitamin product.

- Patient is experiencing significant problems with vomiting and/or pain which is preventing them taking the recommended diet and/or fluid intake and which has not improved 3-7 days after dietary advice (see Appendix 22).
- For banding patients, where there is pain or tenderness over the port site (may indicate infection)
- For banding patients, where there is inadequate restriction despite the patient eating normal textured food (Appendix 22) which may indicate the need for a band adjustment.
- Patient is unable to maintain an adequate intake and/or loses weight too rapidly despite dietary advice (see Appendix 22)

See also Appendix 24. Adjustment of Gastric Bands.

The adjustable gastric band is a band which is placed around the top of the stomach to create a small 20ml pouch. The band has a balloon inside which can hold 9mls. The band is inserted in a deflated state.

4-6 weeks after surgery patients have their first band adjustment in Radiology clinic. Patients are given a barium drink to check band position and fluid is then injected into the port which sits under the skin on the abdomen. The amounts vary depending on the level of restriction provided for each individual. This tightens up the band and reduces the size of the stomach outlet leading to additional dietary restriction. Further adjustments can be arranged as necessary.

Ask patients with gastric bands whether they have adequate restriction from the band (defined as ability to eat a teaplate-sized meal of textured food over 15-20 minutes). If they can eat more than this they may have inadequate restriction.

- If they are able to eat textured food as described above no adjustment is needed
- Some patients report inadequate restriction but are eating easily managed or sloppy foods such as soup, mince, fish in sauce, or continue to have Complan, SlimFast or other high calorie drinks. Advise them to choose smaller portions of more difficult to manage foods (see “Getting the Best out of Bariatric Surgery”). They will need to slow down the rate of eating in order to manage this. Arrange a further appointment to review progress with these changes. A food diary can provide the Dietitian with more detail and can reassure the patient that their intake is not too high in calories. Some patients request a band adjustment because their rate of weight loss does not match their expectations and may require reassurance that they are progressing as recommended. Some patients report inadequate restriction when they have good restriction, because they wish to lose more weight
- Some patients may not have continued to lose weight and may report managing fairly large portion sizes (ie. near normal rather than teaplate size) of textured food (drier meals e.g. grilled meat and fish with little or no sauce). Discuss this with a Bariatric Surgeon who may refer for band assessment
- Occasionally a patient may report having excessive restriction following a band fill. Patients are generally unable to tolerate solid foods at all and may have lost weight rapidly. These patients may have too much fluid in their band and this should be referred to the Upper GI Consultant Surgeon on call as a matter of urgency. The Consultant Surgeon may ask the Bariatric Specialist Dietitian to arrange for the patient to come into hospital that day

If the patient has recently had their band tightened, ask how this has affected nutritional intake.

Failure to attend for follow-up after bariatric surgery is common in UHL (40% in a 2014 audit), particularly in the second year after surgery. The reasons for this are not fully understood but may be related to failure to meet weight loss expectations for some patients.

There are risks for patients not receiving adequate follow-up.
"Many patients presenting for surgery have pre-existing low blood vitamin and mineral concentrations and all bariatric procedures compromise nutrition to a certain extent and have the potential to cause clinically significant micronutrient deficiencies". (BOMSS 2014).

1. Some patients with gastric bands do not seek advice when their band is too tight because they are pleased with the resulting weight loss, however this usually means they are eating a limited diet which is unlikely to be nutritionally adequate.
2. All patients find that it is easier to eat processed foods and high calorie snacks than a healthy diet and may return to some or all of their pre-surgical eating habits without regular monitoring, meaning that protein intakes may also be lower than required.
3. Many patients do not continue to take regular multivitamin and mineral supplements in the long term, thus further compromising their micronutrient status.

The Bariatric Specialist Dietitian carries out all the UHL Trust routine bariatric surgery follow-up and must report to the GP where patients have not attended and have been discharged, in order that the responsibility for monitoring can be transferred when appropriate.

Where patients do not attend (DNA) during the first 2 years following surgery the Bariatric Specialist Dietitian should dictate a letter asking them to contact the service within 4 weeks to rebook and highlighting the importance of nutritional monitoring after bariatric surgery. Record non-attendance on the DNA spreadsheet. If there is no response to the letter discharge the patient through non-attendance as per UHL Trust Policy and provide information for ongoing GP led monitoring.

See Appendix 26 Discharge back to the GP.

By 2 years after bariatric surgery patients should

- Have reached a stable weight (NB there is no guarantee that this will match their target weight)
- Be established on a healthy diet with small portions and regular snacks if necessary to control appetite
- Have developed good weight management skills including monitoring for signs of weight change and taking regular exercise if appropriate
- Take vitamin and mineral supplements regularly as recommended, whether prescription or over the counter, according to their procedure and any micronutrient deficiencies identified.

They are then discharged back to the GP. It is important that following the 2 years of UHL monitoring the GP continues with monitoring, at least annually and more frequently if required (e.g. where there are ongoing micronutrient deficiencies). The Bariatric Specialist Dietitian should discharge the patient back to the GP and request an annual complete nutritional blood screen (see Appendix 18 for tests required).

Patients should be encouraged to take responsibility for requesting annual blood testing and for making an appointment to see their GP 4 weeks after the blood tests were taken to discuss

1. weight, BMI and percentage excess weight loss
2. compliance with both prescription and over the counter vitamin and mineral regimes
3. blood test results and any modifications to vitamin regimes resulting from these.

GPs can be encouraged to search for “nutrition after bariatric surgery” on the Leicester Medicines Strategy Group website for more information.

If further dietetic support is required the GP may refer to LPT Nutrition and Dietetic Service.