Summarised key principles:

- The standard capillary blood glucose (CBG) targets for inpatients with Diabetes are 6-12mmol/l. If a patient with diabetes has high blood glucose levels (i.e. regularly above 12mmol/l for more than 24 hours) the medical team should refer to the 'Hyperglyceamia Decision Support Tool' and 'Insulin Dose Titration Support Tool', available on INsite.
- If blood glucose levels remain persistently high despite following the 'Hyperglycaemia Decision Support Tool' and 'Insulin Dose Titration Support Tool', please refer to the In Reach Diabetes Team (IrDT) via ICE.
- If a patient with diabetes (PWD) is malnourished or at risk of being malnourished (identified via the Malnutrition Universal Screening Tool 'MUST'), they should be offered high energy meals from the menu identified by the '**E**' symbol.
- If a PWD is malnourished or at risk of being malnourished (identified via the 'MUST tool'), they should be offered regular meals and snacks from the snack menu.
- If a patient scores more than 4 on the 'MUST tool' they must be referred to the ward Dietitian.
- The Nurses responsible for dispensing Diabetes medications must check and ensure that Diabetes medication is being given at the optimal time around food.
- A PWD who is prescribed an oral nutritional supplement (e.g. Fortisip) should be encouraged to sip it slowly over 20-30 minutes. This will lower the risk of high blood glucose levels.
- Oral nutritional supplements (e.g. Fortisip) or high energy meals should not be stopped due to high blood glucose levels.
- People with Diabetes should be encouraged to limit sugary food (e.g. honey, table sugar or boiled/jelly sweets) or sugary drinks (e.g. full sugar pop, fruit juice, sugar in hot drinks) to help manage blood glucose.
- The healthy options can be identified by the ♥ symbol on the food and snack menus. These meals and snacks are lower in fat, sugar and salt. These healthy meal and snack options can be offered to inpatients with diabetes of a healthy, stable weight (BMI 18.5-25kg/m^2).

1. Introduction

1.1 This guideline sets out the University Hospitals of Leicester (UHL) NHS Trust procedure in the dietary management of adult inpatients with diabetes.

1.2 There are different classifications of Diabetes. This guideline provides recommendations for inpatients with Type 1 or Type 2 Diabetes, collectively referred to as People with Diabetes (PWD).

1.3 The aim of this guideline is to standardise and support ward staff in providing optimal nutritional and diabetes care for PWD.

1.4 Specifically the objectives regarding the nutritional management of PWD are:

- Provide advice around suitable meal patterns
- Provide advice around suitable food choices
- Ensuring a nutritional balance is met
- Ensuring nutritional requirements are met
- Differentiate advice for patients at risk of malnutrition, and patients not at risk of malnutrition

1.5 This guideline is for the use of all staff at ward level who are involved in the care of patients with diabetes (e.g. doctors, nurses, dietitians, ward hostesses, catering assistants).

1.6 Diabetes is a condition where the body is not able to use the glucose (sugar) in the blood properly. Whether patients are treated by diet, tablets and/or insulin it is important that their blood glucose levels are controlled. Illness and under nutrition can make this difficult.

1.7 PWD are more likely to be admitted to hospital than people without Diabetes. On average 1 in 5 hospital beds (21.6%) are occupied by a PWD (NaDIA report, 2017). They often experience avoidable complications which lead to a longer length of stay, and can be life threatening.

1.8 The avoidable complications seen in hospitals include: poor wound healing, medication management errors, insulin errors, DKA due to under treatment with insulin, hypoglycemia (low blood glucose level) due to over treatment with insulin, development of foot ulcers and not referring appropriately to the diabetes specialist team.

1.9 This guideline will provide practical advice based on current national guidelines and expert professional consensus.

1.10 Please note this guideline will not include the management of PWD whilst on enteral and parenteral nutritional support. Please see the 'Out of Hours Enterally and Parenterally Fed Patients with Diabetes UHL Guideline' (Trust ref: B6/2020) for more guidance on this topic.

1.11 Please see Appendix A for a frequently asked questions supplement. This is to further support the implementation of these guidelines practically at ward level.

2. Guideline Standards and Procedures

2.1 Menu options

a) To reduce the risk of hypoglycaemia, it is important that nursing staff (who are responsible for administering medication) identify the appropriate time to administer diabetes medication around meals and snacks, as indicated on 'eMeds' or on the drug chart.

b) PWD should be supported to make their own food choices. They do not require a specialised menu and should be offered meals from the standard menu and support menus such as: renal, vegan, nut free, chylothorax, bowel preparation (for investigations), modified fibre and modified textures.

c) The Hospitals Food Standards Panel Report (2014) emphasises that all inpatients must be offered 3 main meals and at least 2 additional snacks a day. In UHL we offer 3 snacks a day. To not exceed patient's energy requirements, excess portion sizes should not be encouraged and it is recommended that patients are offered standard servings.

   - For example, a patient can be offered a single packet of crisps as a snack but should not be given 3 packets of crisps in one go, even if the patient requests it.

d) Some PWD will adjust their own medication around what they eating. Information should be made available to PWD regarding the carbohydrate content of meals to allow them do this safely. Please contact your ward Dietitian for support with this.

e) PWD on set doses of insulin may benefit from a meal plan which provides consistency in the carbohydrate content of meals and snacks. Your ward Dietitian can provide support in identifying a suitable meal plan.

f) PWD requiring a gluten free diet should be encouraged to choose the appropriate option (labelled **GF**) on the menu. A dedicated gluten free 'A La Carte' menu is also available.

2.2 Carbohydrate

a) Carbohydrate is an important food group and essential for a healthy balanced diet. People need carbohydrate for energy and Vitamin B.

b) Carbohydrate includes starchy foods (like bread, pasta, rice, potato) and foods which contain sugar (like sweets, biscuits, and fruit).

c) Sugar and starch both break down to glucose in the blood stream.

d) Insulin (made in the body or injected) works with carbohydrate food. If a PWD eats either too much or too little carbohydrate, it can lead to CBG levels going too high or too low.

e) It is important that each hospital meal contains carbohydrate. Patients should be encouraged to eat 3 regular meals a day (breakfast, lunch and evening meal).

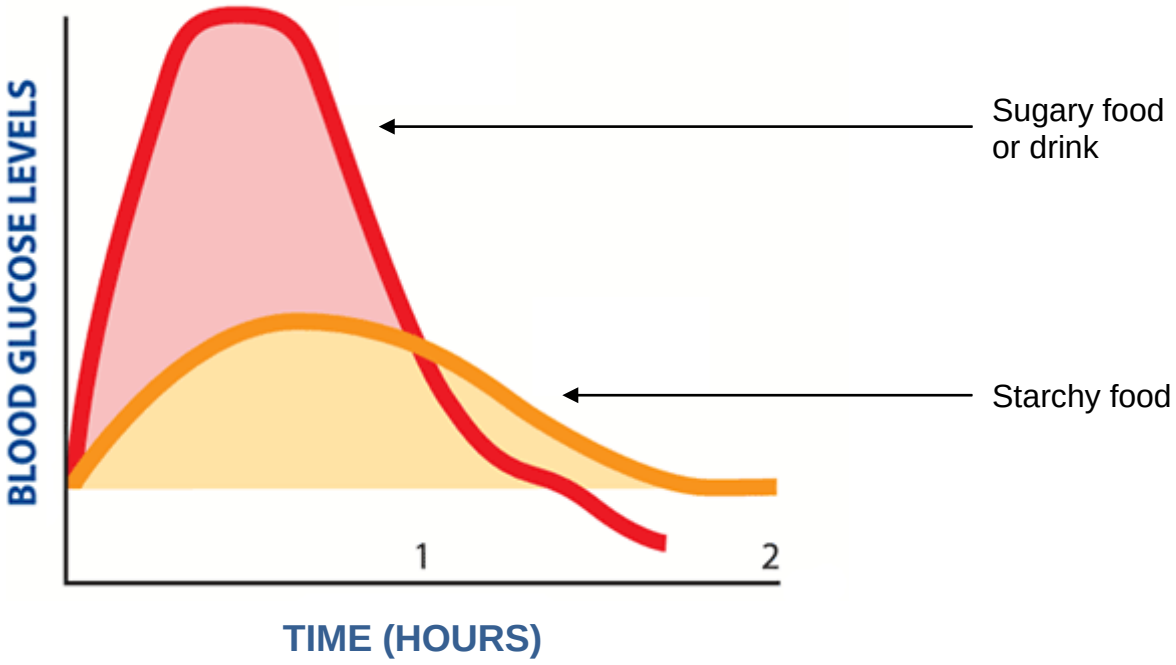
f) Missing carbohydrate with a meal could lead to hypoglycaemia (low blood glucose levels). If a patient misses a meal due to being off the ward for tests and investigations snack boxes are available and can be ordered from catering by calling the internal catering hotline on X17888.

2.3 Sugar

a) Sugar provides energy but no additional nutrients, such as vitamins.

b) Sugar breaks down and causes the blood glucose levels to rise more quickly than starchy food (see Graph 1 below).

Graph 1 The effects of sugar and starch on blood glucose levels



c) This means sugary food and drink will make CBG spike, causing hyperglycaemia.

d) All PWD should be encourage to avoid sugary food (e.g. honey, table sugar or boiled/jelly sweets) or sugary drinks (e.g. full sugar pop, fruit juice, sugar in hot drinks).

e) PWD should be encouraged to eat starchy food with each meal.

2.4 Activity

a) Activity (e.g. walking, physio exercises) will cause blood glucose levels to drop. Please monitor CBG closely and contact the IrDT if you notice the PWD is at risk of hypoglycaemia.

2.5 Nutritionally well patients

This section applies to patients who have a healthy and stable Body Mass Index (BMI) between 18.5-25kg/m^2, or to PWD who are overweight or obese and have a BMI>30kg/m^2).

a) The healthy menu option (♥) identifies meals which are lower in fat, sugar and salt. These options can be offered to PWD who are nutritionally well. The healthy menu option (♥) can also be encouraged for patients who are nutritionally well but have cardiovascular disease.

b) Choosing lower carbohydrate snacks can help lower CBG levels. Weight stable PWD with CBG levels above target should be encouraged to choose lower carbohydrate snacks (e.g. fruit, diet/light yogurts) from the beverage trolley.

   - See Appendix B for the carbohydrate and calorie content of snacks available on the ward.

c) For patient and professional resources, please see the Leicestershire Nutrition and Dietetics Service (LNDS) website (https://www.lnds.nhs.uk/)

2.6 Nutrition support

This section applies to PWD who are malnourished or at risk of malnutrition as identified by the use of 'MUST'.

a) It is estimated that between 20-50% of patients admitted to hospital are malnourished or at risk of malnutrition (Kirkland, 2013). Patients should be screened for malnutrition on admission, weekly and on discharge using MUST.

   See Appendix C for the MUST screening and nutritional intervention algorithm

b) During times of illness and following surgery people may lose their appetite and eat less. Being on insulin and eating less puts a PWD at risk of having a hypoglycaemic episode (also known as a 'hypo'). If a PWD is at risk of having a hypo because they are eating less, ward staff should:

   - Request a review of insulin dose by a prescriber
     i. Adjust the patient's insulin doses, using the 'Insulin Dose Titration Support Tool' for support
   - Or refer to the IrDT via ICE
   - Patients scoring 1 or more should be initiated on the 'First Line Oral Nutritional Care Plan' Appendix D
   - Patients scoring 4 or more should be referred to the ward Dietitian immediately via ICE, as well as initiating the 'First Line Oral Nutritional Care Plan'

c) PWD who are malnourished or at risk of malnutrition should be encouraged to order high energy meals from the menu, labelled 'E'. However they may still have healthy menu options (♥) if this is their personal preference.

d) PWD who are malnourished or at risk of malnutrition should <u>not</u> be restricted in their choice of meals or snacks and can choose any item from the menu. Diabetes medication should be adjusted by the medical team or the IrDT to aim for the patient's target glucose control level.

e) Where indicated on the MUST tool, PWD should be offered additional snacks, milky drinks, complan shakes and soup provided by catering. These should not be restricted in PWD.

f) PWD with swallowing issues should be referred immediately via ICE to Speech and Language services for an assessment

g) Oral Nutritional Supplements (ONS) provided by pharmacy (e.g. Fortisip), should be initiated for a PWD if clinically indicated and recommended by a Dietitian or dictated by a clinical care pathway (e.g. COPD pathway), after an individual nutritional assessment using the eMeds or manual drug chart system only.

h) ONS ordered via eMeds or manual drug chart systems by the ward Dietitian

should not be stopped due to hyperglycaemia. If the PWD becomes hyperglyceamic ONS should be continued and a referral to the IrDT should be made immediately via ICE.

i) The ward Dietitian and IrDT should liaise directly with each other regarding changes to the oral nutritional supplement care plan. This is to ensure the relevant diabetes medications can be adjusted accordingly and optimum oral nutritional intake is achieved.

j) CBG levels should be monitored regularly (as defined in the ward CBG monitor standard operating procedure which is being developed) and diabetes medication should be adjusted according to the IrDT care plan.

k) CBG levels are less variable when a patient has milk or savory based supplements (e.g. Complan, Complan Soup, Fortisip or Scandishake) compared to a juice based supplement (e.g. Fortijuce). Appendix E shows the carbohydrate content of ONS.

l) PWD should be encouraged to sip ONS slowly over 20-30 minutes to minimise the risk of spikes in blood glucose afterwards (post prandial hyperglycaemia).

m) If the patient dislikes or is unable to tolerate an ONS; please contact your ward Dietitian for further assessment.

n) See the LNDS website for patient and professional resources (https://www.lnds.nhs.uk/).

2.7 Ramadam

a) People who are unwell are exempt from fasting during Ramadam. It is advisable that inpatients with Diabetes do not fast for Ramadam but it is their decision to do so.

b) If a PWD on the ward wants to fast for Ramadam, please refer to the IrDT.

c) For more information regarding Ramadam and Diabetes, please see the leaflet 'Looking after diabetes during Ramadan: A guide for patients' available on INsite.

2.8 Pregnancy

a) For more information on managing Diabetes in Pregnancy, please see the 'Diabetes in Pregnancy' (B33/2008) guideline available on INsite.

3. Education and Training

a) Ward Staff e.g. Medical staff, Nursing staff, Health Care Assistants, Ward Hostesses and Ward Housekeepers should be made aware of this clinical guideline and training available from their ward dietitian.

b) Dietitians will lead on training individuals on the use of this clinical guideline.

c) Student dietitian's may be involved in training as part of their undergraduate degree clinical placement.

d) Student Nurses should also receive training for this guideline as part of their interprofessional training.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
PWD who are malnourished or at risk of malnutrition are being offered suitable meals and snacks from the menu, unless otherwise indicated.	Audit	UHL Food Forum	Annually	Audit report
PWD who are not at risk of malnutrition are being offered suitable meals and snacks from the menu, unless otherwise indicated.	Audit	UHL Food Forum	Annually	Audit report
PWD who self-adjust their own medication are being offered information on the carbohydrate value of meals on the menu.	Audit	UHL Food Forum	Annually	Audit report

5. Supporting References

BAPEN. Malnutrition Matters Meeting Quality Standards in Nutritional Care. 2010.

British Dietetic Association. The Nutrition and Hydration Digest: Improving outcomes through food and beverage services. 2nd edition. 2017.

Department of Health. The Hospital Food Standards Panel's report on standards for food and drink in NHS hospitals. 2014.

Diabetes UK. Evidence Evidence-based nutrition guidelines for the prevention and management of diabetes. 2018.

Joint British Diabetes Society. Inpatient Care for People with Diabetes: The Economic Case for Change. 2011.

Joint British Diabetes Society. Self-management of diabetes in hospital. 2012.

Kirkland, L., Kashiwagi, D., Brantley, S., Scheurer, D., & Varkey, P. (2013). Nutrition in hospitalized patient. Journal of Hospital Medicine, 8(1): 52-58.

National Institute for Health and Care Excellence (NICE). NG17. Type 1 Diabetes in Adults:Diagnosis and Management. 2016.

National Institute for Health and Care Excellence (NICE). NG28. Type 2 Diabetes in Adults: Management. 2017.

NHS Digital. 2017. *National Diabetes Inpatient Audit (NaDIA)*. [Online] Available at: https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-inpatient-audit/national-diabetes-inpatient-audit-nadia-2017. [Accessed 25 July 2018].

NHS Plan, Better Hospital Food (BHF) Programme. 2000
University Hospitals of Leicester. Nutritional Screening and First Line Oral Nutritional Care Policy of Adults. 2015.

University Hospitals of Leicester. Hyperglycaemia Decision support tool (21811605SJ_Version 2 Feb 2018). [online]. Available from: http://insitetogether.xuhl-tr.nhs.uk/Divisions/Corporate/CommunicationsandExternalRelations/Documents/CM/HIGGINS_ManagementofHyperglycaemiaHCBGDiabetes_21811605.pdf

University Hospitals of Leicester. Insulin Dose titration support tool (Version 1. Feb 2018_11811564). [online]. Available from: http://insitetogether.xuhl-tr.nhs.uk/Divisions/Corporate/CommunicationsandExternalRelations/Documents/CM/(HIGGINS)InsulinDoseTitrationSupportTools11811564.pdf

6. Key Words

nutrition, dietetic, diabetes, diet, inpatient, inpatients, nutritional care pathway, blood glucose, insulin, food, snacks, carbohydrate, sugar, starch

CONTACT AND REVIEW DETAILS	
Guideline Lead **Michael Skarlatos** **Diabetes Specialist Dietitian**	**Executive Lead** **Medical Director**
Details of Changes made during review: **Review guideline**	

Can a PWD have sugar?

Adding sugar to drinks or foods is a personal choice, but should be discouraged as this will cause their CBG levels to rise.

The standard capillary blood glucose (CBG) targets for inpatients with Diabetes are 6-12mmol/l. If a patient's CBG levels rise above target regularly because of adding sugar to drinks or foods, they should be encouraged to try alternatives and if necessary a referred to the IrDT.

Can a PWD eat sugary foods/snacks like biscuits, cakes or puddings?

If a PWD is not at risk of malnutrition and is managing regular food from the hospital menu they should be encouraged to choose lower carbohydrate containing snacks (see appendix F).

If a PWD is malnourished or at risk of malnutrition they should be encouraged to snack regularly in between meals to increase their energy intake, and should not be restricted in their choice of snack.

If snacking causes CBG to rise above their target a referral should be sent to the IrDT.

Can a PWD have sugary foods/snacks like biscuits, cakes or puddings if their CBG levels are regularly above target?

Snacking on sugary foods is a personal choice, and should be respected even if CBG levels are above target.

If a PWD is not at risk of malnutrition they should be encouraged to choose lower carbohydrate containing snacks (see appendix F).

If a PWD is malnourished or at risk of malnutrition, they should be encouraged to snack regularly in between meals to increase their energy intake.

If snacking causes CBG to rise above their target a referral should be sent to the IrDT.

Does a PWD who has high CBG levels need to order healthier meal options from the menu?

No. A PWD should not be restricted in their meal choice.

Each meal on the menu will contain a different amount of carbohydrate, and therefore a different impact on CBG levels. If a patient requires more information on the carbohydrate content of meals, or needs support in meal planning, they can speak to the ward Dietitian.

Should a PWD be having nutritional supplements (such as Fortijuce/Fortisip) if they have high CBG levels?

Yes. If a PWD has been commenced on a specialist ONS by the ward Dietitian or clinical pathway, the supplement should be given as suggested in the drug chart or the electronic prescribing medicines administration system (e.g. eMeds). As the patient is either malnourished or at risk of malnutrition, delaying these nutritional supplements may impact on their clinical recovery.

If a PWD CBG levels are high it needs to be addressed medically. This may mean referring to the IrDT, or adjusting their diabetes medication appropriately.

What should I do if a patient has high CBG levels, is enterally fed (tube fed) and is eating orally?

Refer the patient to your ward Dietitian for a nutritional assessment and to the IrDT for a glycemic assessment (via ICE).

The ward Dietitian and IrDT should liaise directly with each other and communicate any changes to their care plans such as updates to their medication.

How should I change a patient's diet, who is also on steroids, to avoid their CBG levels going high?

The use of steroid treatment in PWD will undoubtedly result in worsening CBG. This is often called 'steroid induced hyperglycaemia'.

The raised CBG is not the result of food, and by restricting diet you may prolong their recovery time.

A PWD on steroids should receive additional diabetes management. Please refer to the IrDT.

Should a PWD have a bed time snack to avoid hypoglycaemia?

A PWD should be offered snacks at the same times as patients without diabetes.

A PWD should not be routinely offered snacks before bed to avoid hypoglycaemia overnight.

If a PWD is regularly hypoglycaemic or snacking to avoid hypoglycaemia, overnight then their diabetes medication needs adjusting. Please refer to the IrDT.

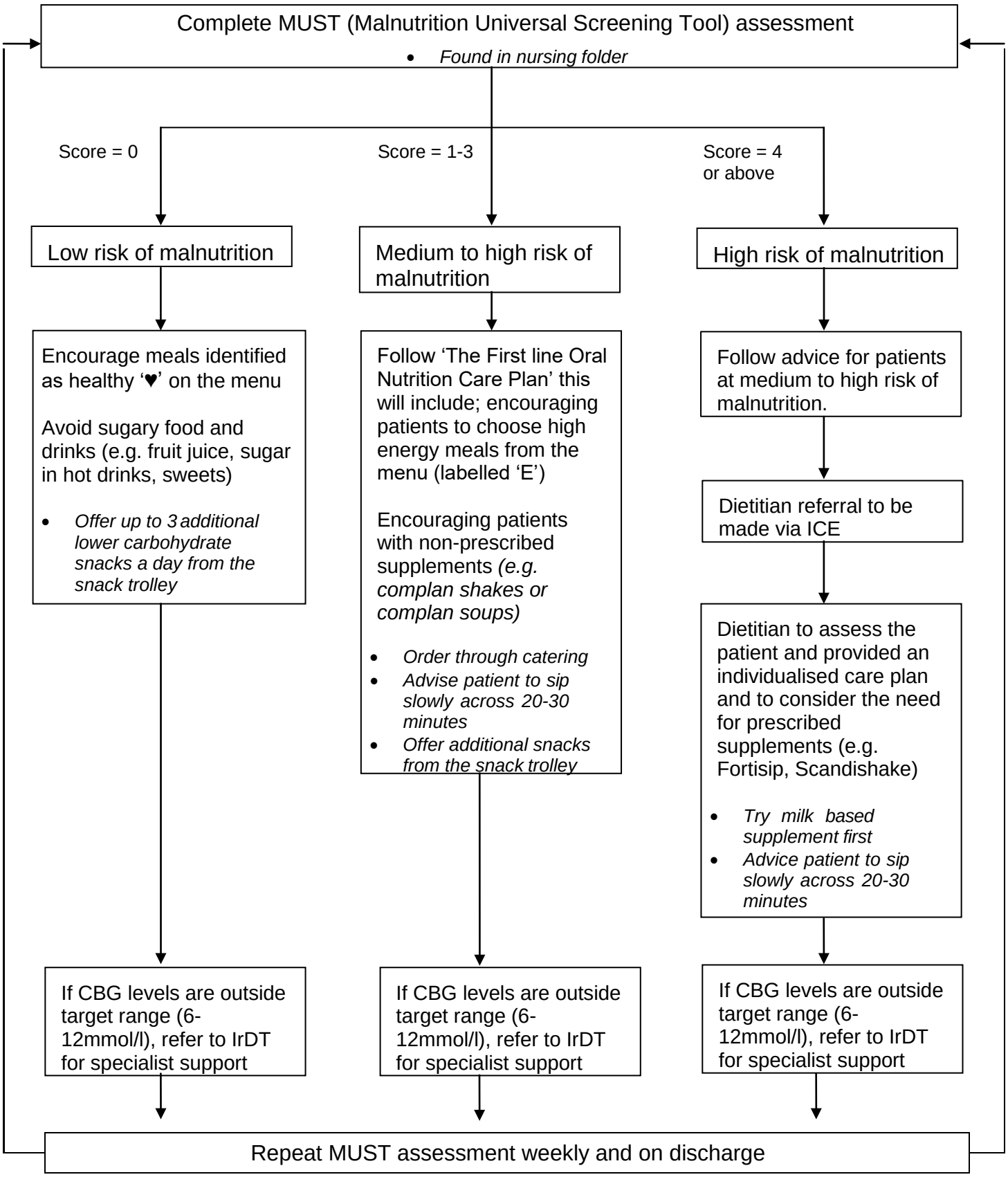
Appendix B – Carbohydrate and calorie value of snacks available on the ward

University Hospitals of Leicester NHS
NHS Trust

	Snack (serving)	Calories (kcal)	Carbohydrate (g)
	Apple (per individual portion)	56	13
	Orange (per individual portion)	62	13
	Banana (per individual portion)	70	17
	Ready Salted Crisps (per packet)	140	14
	Cheese and Onion Crisps (per packet)	138	14
	Salt and Vinegar Crisps (per packet)	139	14
	Quavers (per packet)	107	12
	Plain Flapjack (per individual portion)	158	22
	Fruit Sponge Cake Slice (per individual portion)	125	16
	Plain Sponge Cake Slice (per individual portion)	146	17
	Sponge Cake with Strawberry Filling (per individual portion)	110	16
	Sponge Cake with Chocolate Filling (per individual portion)	110	16
	Thick and Creamy Yogurt (per pot)	140	16
	Muller Light Yogurt (per pot)	89	14
	Assorted Packs of Biscuits (per packet of 3)	141-213	19-27

Appendix C – MUST screening and nutritional intervention algorithm

University Hospitals of Leicester NHS
NHS Trust



Please Complete or Affix Identification Label			University Hospitals of Leicester NHS NHS Trust
Surname	Forename		
Hospital No	NHS No		
			Moved to
Date of Birth	Ward	Site	Date and Time Moved

First Line Oral Nutrition Care Plan

Goal: To monitor Patient's who score 1 or more on the MUST for signs of malnutrition and encourage fluid and diet intake

Actions / Care Need

a) Assist patient with ordering suitable meal choices (recommend high energy/high calorie main courses and puddings using the coding on the menu)

b) Ensure any special diet is ordered if required by using coding on the menu (e.g. non gluten containing ingredients or vegetarian, or via catering services (e.g. puree, peanut and tree nut free, low residue) and refer to the Ward Dietitian to order any exclusions (e.g. multiple allergies)
Details of diet required: .....

c) Offer assistance with eating and drinking at mealtimes and inbetween mealtimes, initiate red tray / red lid system if indicated as detailed in the Enhancing Patient Mealtimes Guidelines.

d) If patient has difficulties in swallowing refer to SALT for assessment, Date referred.....

e) Encourage the patients to request additional items for snacks between meals

f) Encourage the patient to drink milk and milky drinks

g) Offer patient one build up a day (no need to be prescribed) unless contraindicated e.g. patients with renal disease, lactose intolerant, milk allergy or patient following a low residue diet. Contact Ward Dietician for advice.

h) Treat underlying conditions that may prevent eating and drinking such as nausea, vomiting, diarrhoea

i) Commence food intake charts for all meals, snacks and record an accurate fluid balance

j) Weigh the patient twice a week and document on weight chart.

k) Review three days after initiating care plan and if intake is poor / minimal refer patient to Ward Dietitian

Other care needs (please state):

Name of Nurse	Signature	Date

First Review (3 days after initiating care plan)

On evaluation of food charts for past three days does patient require referral to Ward Dietitian? Yes / No

If Yes: Continue food charts and this care plan
Date referred to Ward Dietitian in iCM.....

If No: Continue to nutritionally screen using MUST once a week after admission and continue to monitor using the Nutrition Core Care Plan

Any other comments:

Name of Nurse	Signature	Date

Further reviews

Date Reviewed:										
Care Plan Active?	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N	Y / N
Print Name										

ORAL NUTRITION

Oral nutritional supplement	Serving size	Carbohydrate	Calories
Scandishake with milk	85g sachet, with 240ml of full fat milk	67g	588kcal
Fortisip	200mls	37g	300kcal
Fortisip compact	125mls	37g	300kcal
Fortisip compact fibre	125mls	32g	300kcal
Fortisip compact protein	125mls	31g	300kcal
Fortisip 2kcal	200ml	42g	400kcal
Fortisip yogurt style	200ml	38g	300kcal
Forijuce	200ml	67g	300kcal
Forticreme complete	125g	24g	200kcal
Nutilis Complete Stage 1	125ml	37g	306kcal
Nutilis Complete Stage 2	125g	37g	306kcal
Nutilis fruit stage 3	150g	26g	206kcal
Complan milkshakes	55g sachet, with 200mls water	34g	244kcal
Complan soup	55g sachet, with 200mls water	33g	243kcal