Worcestershire NHS
Acute Hospitals NHS Trust

GUIDELINE FOR ENTERAL TUBE FEEDING (NASOGASTRIC OR PEG) IN PATIENTS WITH DIABETES MELLITUS TREATED WITH INSULIN

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and/or carer. Health care professionals must be prepared to justify any deviation from this guidance.

INTRODUCTION

Most patients with pre-existing diabetes will develop hyperglycaemia during enteral feeding. In general this is best managed with insulin. Referral to a Dietitian is essential so that the patient's nutritional needs can be assessed. Discussion between the diabetes team and Dietitian is important to determine, the type of feed, method of administration and the duration of feed so that insulin can be given accordingly. For patients where diabetic gastroparesis is suspected post-pyloric feeding may be appropriate.

All patients with diabetes mellitus who require enteral feeding within Worcestershire Acute Hospitals, and patients who are receiving community enteral feeding with support from Worcestershire Acute Hospitals are covered by this guideline.

THIS GUIDELINE IS FOR USE BY THE FOLLOWING STAFF GROUPS :

Qualified medical and nursing staff caring for diabetic patients requiring enteral feeding.

Lead Clinician

Dr David Jenkins — Consultant Physician

Approved by the Medicine Safety Committee: 14th April 2015

This is the most current document and is to be used until a revised version is available: 25TH August 2018

It is the responsibility of every individual to check that this is the latest version/copy of this document.

Key amendments to this guideline

Date	Amendment	By:
04.11.2010	Slight amendment made to content	Dr D Jenkins
21.06.2012	Minor amendments made; added detail to the treatment of hypoglycaemia, referenced other relevant Trust guidelines and changed target glucose range in line with more recent Trust guidance.	Dr D Jenkins
04.03.2015	Minor amendments made; Additional information for treatment of moderate to severe hyperglycaemia during enteral feed, Update to treatment of hypoglycaemia in line with trust guidance. Update to bolus feeding via enteral route. Update made to out-of-hours emergency feeding regimen in line with trust guidance.	Dr Jenkins Sue Rogers Susan Summers Jo Shuck
August 2017	Document extended for 12 months as per TMC paper approved on 22nd July 2015	TMC
December 2017	Sentence added in at the request of the Coroner	

GUIDELINE FOR ENTERAL TUBE FEEDING (NASOGASTRIC OR PEG) IN PATIENTS WITH DIABETES MELLITUS

INTRODUCTION

Most patients with pre-existing diabetes will develop hyperglycaemia during enteral feeding. In general this is best managed with insulin. Referral to a Dietitian is essential so that the patient's nutritional needs can be assessed. Discussion between the diabetes team and Dietitian is important to determine, the type of feed, method of administration and the duration of feed so that insulin can be given accordingly. For patients where diabetic gastroparesis is suspected post-pyloric feeding may be appropriate.

COMPETENCIES REQUIRED

Qualified medical and nursing staff caring for diabetic patients requiring enteral feeding.

PATIENTS COVERED

Patients with diabetes mellitus who require enteral feeding within Worcestershire Acute Hospitals. Patients who are receiving community enteral feeding with support from Worcestershire Acute Hospitals are also covered by this guideline.

GUIDELINE

1. Establishing a feed (should be done in an Acute setting for people with diabetes)

Insulin requirements will vary depending on the length of the feeding time and the volume of feed. When enteral feeding is being established, feed delivery is likely to be between 15-20 hours in duration. The volume of feed can vary between 1000-3000 ml a day. The standard feed used is Nutrison Multifibre (1 kcal/ml). The Dietitian assesses nutritional and fluid requirements and devises a regimen to meet the patient's needs.

Give 24 units Insulatard (or other basal insulin as advised by diabetes team) subcutaneously 30 minutes prior to feed start (07.30 if starting feed at 0800). Commence feed 30 minutes after insulin has been administered. Monitor fingerstick blood glucose at 2 hourly intervals during feeds until glycaemic control is considered satisfactory. After each feed measure fingerstick blood glucose every 4 hours until glycaemic control is considered satisfactory. (Target range 7 – 11 mmol/l).

If hyperglycaemia (blood glucose > 20mmol/l) occurs during the feed, review and increase the subsequent insulin dosage. Consider administering 6 units of soluble insulin (Actrapid) or Novorapid (or other fast acting insulin as advised by diabetes team) subcutaneously. This can be repeated again after 6 hours if subsequent blood glucose measurements remain above 20mmol/l. Increase the insulin dose by at least 4 units prior to the next feed.
If persistent severe hyperglycaemia (blood glucose >20mmol/l) occurs during the feed consider starting IV insulin according to the Trust's Continuous Variable rate IV insulin infusion guideline (WAHT-END-011).
Alternatively in community settings give 6 units of soluble insulin (Actrapid) or Novorapid (or other fast acting insulin as advised by diabetes team) subcutaneously. This can be repeated after 2 hours if subsequent blood glucose measurements remain above 20mmol/l. Increase the insulin dose by at least 4 units prior to the next feed.

If hypoglycaemia (blood glucose <4mmol/l) occurs during or after the feed, treat according to the Trust guideline (WHAT-END-004). (Give 2 x 100 mls orange juice via the enteral tube in hospitalized patients. (Give 60mls Lucozade via the feeding tube in community settings). Continue the feed and repeat fingerstick glucose after 10 minutes. Reduce the insulin dose by at least 4 units prior to the next feed. If the feed is not currently running or due to be started within 30 minutes a 100ml bolus of fortisip should be given (approx. 15g carbohydrate equal to someone having a snack if taking oral intake).
Consider possible causes of hypoglycaemia e.g. blocked feeding tube.

Adjust the dose of insulin prior to feeding according to blood glucose readings in conjunction with the diabetes team.

2. Established feed over 8-15 hours, either in day or overnight
Once a feed is established, feed duration is likely to be reduced to 8-15 hours in the daytime, which is more physiological for a patient.
Overnight feeds are normally used for patients who eat during the day but are unable to eat their entire nutrient requirement, or who need to be off the pump e.g. for physiotherapy.

Give the appropriate dose of Insulatard (or other basal insulin advised by diabetes team as worked out in establishing the feed) subcutaneously 30 minutes prior to commencement of the feed. Manage blood glucose as in 1.

Bolus feeding
This normally consists of Fortisip Multifibre/Fortisip supplements. The frequency varies from 1 to 6 bottles cartons per day. Fortisip Multifibre is a nutritionally complete supplement (1.5 kcal/ml) but has high carbohydrate content. Each 200 ml supplement contains 36.8g of carbohydrate and may be given as 4 x 50 ml boluses over approximately 10-15 minutes depending on patient's tolerance.
The boluses are distributed evenly throughout the day to promote regular carbohydrate intake and avoid hypo/hyperglycaemia.

Give Novorapid or other fast acting insulin as advised by diabetes team 6 units subcutaneously with each supplement. Monitor fingerstick blood glucose every 2 hours until satisfactory. Manage blood glucose changes as in 1. Doses of Novorapid should be adjusted if persistent hyper/hypoglycaemia occurs.

Continuous feeding combined with bolus feeds
Some patients require a combination of the above; the Dietitian will devise the feeding regimen.

Standard feed / Standard sip feed
Nutrison Multifibre is the standard tube feed and Fortisip Multifibre is the standard sip feed that is used in Worcestershire Acute Hospitals NHS Trust; both contain fibre, which can help to promote regular bowel movement for patients on longer term feeding. Studies suggest no significant improvement in glycaemic control in patients with diabetes on fibre feeds compared to a standard feed (e.g. Nutrison Standard).
A patient may occasionally require more energy dense feeds; if the feed regimen is markedly different from those described above, discussion with the Dietitian is essential.

Bank Holidays
If a feed is started during a weekend / bank holiday, an emergency feed regimen is in place on the wards or via the intranet under Clinical guidelines, Ref code: WAHT-NUT-008. This advises nursing staff to commence Nutrison Multi Fibre feed at 50 ml for 20 hrs daily (1000

ml / day) until the Dietitian reviews. It also advises on the action to be taken with those patients who are at risk of refeeding syndrome. (See refeeding syndrome guidelines on the intranet WAHT-NUT-006). Patients with diabetes should be managed as in number 1. Refer to the Dietitian and diabetes team as soon as possible.

MONITORING TOOL

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
Whole Document	'No patient deemed to require enteral feeding should have the commencement of feeding delayed by more than 24 hours because of diabetes".	Audit: 100% compliance	Annually	Diabetes Directorate	Diabetes Directorate	Annually

REFERENCES

Coulston AM. Enteral nutrition in the patient with diabetes mellitus. Curr. Opin. Nutr. Metab. Care (2000) 3: 11-15

CONTRIBUTION LIST

Key individuals involved in developing the document

Name	Designation
Dr David Jenkins	Consultant Physician
Mrs Emma Innes	Diabetes Specialist Nurse
Mrs Jo Brown	Senior Dietitian
Mrs Rosanne Dunkley	Senior Dietitian

Circulated to the following individuals for comments

Name	Designation
Dr Paul Newrick	Consultant Physician
Dr Irfan Babar	Consultant Physician
Dr Paul Peter	Specialist Registrar
Mrs Amanda McCarthy	Diabetes Education Facilitator
Ms Alison Hall	Diabetes Community Nurse
Ms Suzanne Lisseman	Diabetes Specialist Nurse
Mrs Helen O'Gorman	Diabetes Specialist Nurse

Circulated to the following CD's/Heads of dept for comments from their directorates / departments

Name	Directorate / Department
Mrs Nalinee Owen	Dietetics Manager

Circulated to the chair of the following committee's / groups for comments

Name	Committee / group

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

		Yes/No	Comments
1.	**Does the policy/guidance affect one group less or more favourably than another on the basis of:**		
	Race	No	
	Ethnic origins (including gypsies and travellers)	No	
	Nationality	No	
	Gender	No	
	Culture	No	
	Religion or belief	No	
	Sexual orientation including lesbian, gay and bisexual people	No	
	Age		
2.	**Is there any evidence that some groups are affected differently?**	No	Older people are more likely to need artificial feeding.
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	Not applicable	
4.	**Is the impact of the policy/guidance likely to be negative?**	No	
5.	**If so can the impact be avoided?**	Not applicable	
6.	**What alternatives are there to achieving the policy/guidance without the impact?**	Not applicable	
7.	**Can we reduce the impact by taking different action?**	Not applicable	

If you have identified a potential discriminatory impact of this key document, please refer it to Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact Human Resources.

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.