Guidelines for Starting Nasogastric or Orogastric Enteral Tube Feeds in Children Out of Hours

University Hospitals of Leicester NHS
NHS Trust

Trust Ref C12/2023

1. Introduction

These guidelines are intended to guide qualified nursing staff, medical teams and pharmacists of the appropriate enteral feeds and feeding regimes to use when initiating nasogastric/orogastric (NG/OG) tube feeds in children out of hours, at weekends or Bank Holidays when there is no ward Dietitian available to undertake an individual nutritional assessment, calculate nutritional requirements and design a bespoke enteral feeding regimen.

If children are urgently started on NG/OG tube feeds they may be under-nourished. Re-feeding syndrome can occur when starting an enteral feed in this vulnerable group of patients if it is not identified and treated appropriately. Each patient needs to be assessed for re-feeding risk, prior to commencing the enteral feed and treat appropriately.

This guideline does not replace a dietetic assessment and referral via ICE to the Dietitian is recommended as soon as possible.

2. Scope

This guideline is to be used when a Dietitian is not available to assess the patient, and ensures that the patient is fed safely when commenced on an NG/OG enteral feed.

Nursing staff and medical staff both have a role in starting enteral feeds via NG/OG tube. Appendix 1 “Starting Nasogastric/Orogastric Feeds in Children” provides a flow chart check list to be completed for each patient commencing NG/OG tube feeds.

These guidelines do not cover children on the Intensive Care Units (CICU/CPICU/NNU) or High Dependency Unit who have their own starter regimens for feeding - please refer to Feeding Guidelines for Children on Intensive Care Units Trust reference C90/2016.

These guidelines should not be used for children with inherited metabolic disorders, acute renal failure, diabetes, food allergy or patients on ketogenic diet therapy. These patients require Dietitian review prior to starting enteral feeding.

These guidelines should be used in conjunction with the Nasogastric and Orogastric Tube Insertion in Children and Neonates UHL Childrens Hospital Policy (2021) Trust Reference: B54/2017.

3. Recommendations, Standards and Procedural Statements

Nursing staff will need to obtain current weight and a weight history of the patient, calculating any weight loss as per the PYMS nutritional assessment tool. Percentage weight loss is required to assess the risk of refeeding syndrome (see Action 1; Appendix 1; Appendix 2).

Re-feeding syndrome can occur in malnourished patients undergoing reintroduction of feeding. It is severe fluid and electrolyte shifts and metabolic complications resulting in decreased plasma levels of phosphate, potassium and magnesium. Treatment of refeeding syndrome is outlined in Action 1 and Appendix 1. Although rare in children, it is important to be aware of those patients at risk and closely monitor them. Please refer to Trust guideline, ref: B19/2019 - Guideline to identify and manage paediatric inpatients who are at risk of refeeding syndrome. It is important to note that serum electrolytes may not fall until after feeding has started therefore DAILY blood monitoring (Action 1; Appendix 1) is essential to identify refeeding problems early and optimise opportunity for intervention and treatment. Feeding without adequate Thiamine

can lead to Wernickes Encephalopathy; therefore providing supplementation to those at risk PRIOR to and for the first 10 days of feeding is important. Appendix 3 provides medication dosing information for Thiamine and Vitamin B.

In the absence of a Dietitian, a doctor will need to specify dosage of the appropriate feed according to 'interim feeding plan'. Action 3 and Appendix 4 outline the procedure used to choose this feed and feeding plan. Nursing staff will be responsible for the administration of feed according to the appropriate feed regimen and documentation of this via fluid record charts.

Procedure / Process for starting NG/OG feeds in children	
No.	**Action**
1	**Assess risk of refeeding syndrome** Patients at risk of refeeding syndrome include **one or more** of the following symptoms: • Have had little (less than 50% of usual intake) or no nutrition for 5 days or more • Have experienced acute weight loss of 15% or more in the last 6 months • Have abnormal blood levels of potassium, magnesium or phosphate prior to feeding Or patients who have **two or more** of the following symptoms: • Have experienced acute weight loss of 5-10% in the last 2 months • A previous history of refeeding syndrome • Are severely underweight (BMI <0.4th centile) • Have experienced malabsorption, severe vomiting and/or diarrhoea for 5 days or more If a child is at risk of refeeding syndrome: • DO NOT start feeding without checking bloods for potassium, phosphate, magnesium, calcium and sodium – correct any low levels PRIOR TO FEEDING. • Administer B VITAMINS before feeding and then daily for the first 10 days of feeding (see Appendix 3 for dosing information) • REPEAT DAILY BLOODS for 7 days after starting feeding – levels of potassium, phosphate, magnesium, calcium, sodium and glucose may fall and will require urgent correction/supplementation Only commence feeding once all the above actions have been completed.
2.	Follow **Nasogastric and Orogastric Tube Insertion in Children and Neonates UHL Childrens Hospital Policy (2021) Trust Reference: B54/2017** to check position of NG/OG tube.
3.	**Commence NG/OG enteral tube feeding** • Follow **Appendix 3** for choice of feed, feed delivery method and rates. The feed regimen chosen should be documented in patient notes. Doctors should specify appropriate feed and dose and administration as per 'interim feed regimen' selected. Nursing staff should deliver feed according to the selected regimen and document administration via fluid record charts. **These interim NG/OG enteral feed regimes may not meet full nutritional or fluid requirements and IV fluids should be continued where appropriate.** Monitor for abdominal distension, nausea/vomiting, reflux or diarrhoea to ensure feed is tolerated. Do not progress to increase volumes/rates unless tolerating previous.

Procedure / Process for starting NG/OG feeds in children	
4.	**Refer to ward Dietitian on next working day** (via ICE electronic referral, you may also bleep your ward Dietitian or telephone ext.15400 on the next Dietitian working day) for full individual nutritional assessment, calculation of nutritional requirements and final enteral feeding regimen.

4. Education and Training

Only staff who have fully completed the Children's Hospital Nasogastric feeding competencies, and have this evidenced on HELM, should undertake enteral tube feeding in paediatric patients. For further details please refer to **Nasogastric and Orogastric Tube Insertion in Children and Neonates UHL Childrens Hospital Policy (2021) Trust Reference: B54/2017.**

5. Monitoring and Audit Criteria

Key Performance Indicator	Method of Assessment	Frequency	Lead
Does the guideline provide appropriate nutritional intake for selected patients	Audit	Annual	Ellen Wilford - Speciality Clinical Lead for Women's and Children's Dietetic Team
Compliance at local level	Audit	Annual	Neonatal and Paediatric Ward Management Teams

6. Legal Liability Guideline Statement

Guidelines issued and approved by the Trust are considered to represent best practice. Staff may only exceptionally depart from any relevant Trust guidelines providing always that such departure is confined to the specific needs of individual circumstances. In healthcare delivery such departure shall only be undertaken where, in the judgement of the responsible healthcare professional' it is fully appropriate and justifiable - such decision to be fully recorded in the patient's notes

7. Supporting Documents and Key References

Nasogastric and Orogastric Tube Insertion in Children and Neonates UHL Childrens Hospital Policy **Document Ref: B54/2017** - Latest version: 15/10/2021

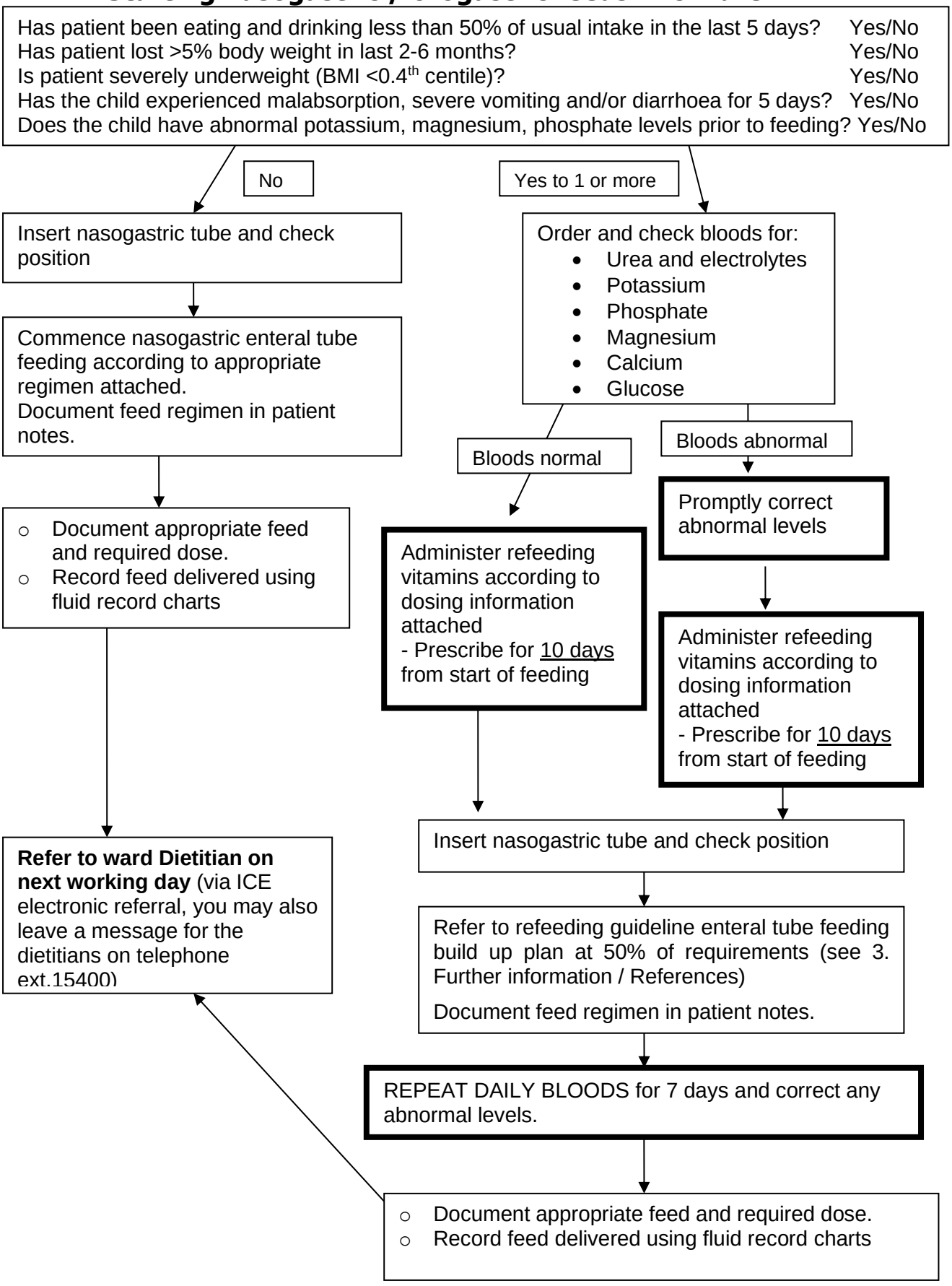
Guideline to identify and manage paediatric inpatients who are at risk of refeeding syndrome. **Document Ref: B19/2019**- Latest version: 19/07/2019

8. Key Words

Nasogastric feeding, NG feeding, Orogastric feeding, OG feeding, Out of Hours, Feeding plan, Enteral Nutrition

Appendix 1 – Please print and sign against boxes as completed in patient notes.

Starting nasogastric / orogastric feeds in children



Appendix 2

Percentage weight loss calculation

You will need to calculate percentage weight loss to assess risk of refeeding syndrome.

Calculation:

$$\%\ weight\ loss = \frac{previous\ weight - current\ weight}{previous\ weight}\ x\ 100$$

Example:

Previous weight, 2 months ago: 12.3kg
Current weight, today: 11.7kg

$$\frac{12.3 - 11.7}{12.3}\ x\ 100 = 4.9\%$$

Child has lost 4.9% body weight in 2 months.

Appendix 3

Refeeding Syndrome Prevention - Medication Dosing Information

There is currently no published data on use and dosing of vitamin supplementation for the prevention of refeeding syndrome. The following provides initial dosing of vitamin supplementation. All dosing should be adjusted according to measured vitamin levels a well as assessment for symptoms of excessive dosing – refer to dietician or pharmacist for further advice.

Day 0 – day of first planned feeding – IV supplementation

IV Pabrinex Infusion (Licensed for age but off label for indication)

<6 years	2.5ml	of each of Pabrinex 1 and 2 ampoule
7 - 9 years	3.5ml	of each of Pabrinex 1 and 2 ampoule
10 – 11years	5ml	of each of Pabrinex 1 and 2 ampoule
12 - 14 years	6ml	of each of Pabrinex 1 and 2 ampoule
15 years and over	10ml	of each of Pabrinex 1 and 2 ampoule

Each IV Pabrinex No. 1 ampoule (5ml):
- Thiamine 250mg
- Riboflavin 4mg
- Pyridoxine 50mg

Each IV Pabrinex No. 2 ampoule (5ml):
- Ascorbic Acid 500mg
- Nicotinamide BP160mg
- Anhydrous Glucose 1000mg

Days 1-10 – Oral Supplementation (0.5mg/kg/day thiamine, 5mg limited absorption)

1 month - 1 years	Vigranon Liquid 5ml TDS
2 - 11 years	Vigranon Liquid 10ml TDS
12 years and over	Vigranon Liquid 15ml TDS

Or

Thiamine 100mg TDS and Vitamin B Co Strong 1-2 tabs TDS

Vigranon Liquid contains in 5ml:
- Thiamine 5mg
- Riboflavin 2mg
- Nicotinamide 20mg
- Pyridoxine 2mg
- Panthenol 3mg

References

Guideline to identify and manage paediatric inpatients who are at risk of refeeding syndrome. Trust ref: B19/2019

Appendix 4

Starter nasogastric / orogastric feed regimen – For patients who are not eating and drinking

Age 0-6 months Weight <10kg	Age 6-12 months Weight 6-10kg	Age 1-5 years Weight 8-20kg	Age > 6 years Weight >20kg
Feed = Expressed Breast Milk or standard infant formula Unless previously prescribed specialist formula – in which case this should be continued	Feed = Infatrini (Nutricia)	Feed = Nutrini (Nutricia)	Feed = Nutrison (Nutricia)
Day 1 Bolus feeds to mimic usual feeding Aiming for 100ml/kg/day	**Day1** 35ml 3 hourly x 8	**Day1** 60ml 3 hourly x 4 then 80ml 3 hourly x 4	**Day 1** 100ml 3 hourly x 8
Day 2 Bolus feeds to mimic usual feeding Aiming for 150ml/kg/day	**Day 2** 70ml 3 hourly x 8	**Day 2** 100ml 3 hourly x 8	**Day 2** 150ml 3 hourly x 8
Volumes for continuous feeds, if clinically indicated:			
Day 1 aim: 100ml/kg	Day 1 aim: 280ml	Day 1 aim: 560ml	Day 1 aim: 800ml
Day 2 aim: 150ml/kg	Day 2 aim: 560ml	Day 2 aim: 800ml	Day 2 aim: 1200ml
Refer to Dietitian via ICE electronic referral *You can also bleep/pager or extension 15400 on dietitians' next working day.*			

Primarily give boluses via a gravity feeding set or syringe. Alternatively, give via a pump over 30 minutes.

If clinically indicated, feeds can be given continuously over 12-20 hours, aiming for the volumes recorded in the table above (please calculate rates accordingly). Alternatively, volumes and rates can be directed by the medical team if a need for reduced enteral intake is indicated.

Only progress if tolerating previous volume and rates

Please note these **interim** NG/OG enteral feed regimes **may not meet full nutritional or fluid requirements; IV fluids should be continued where appropriate and an immediate referral to a Dietitian should be made via ICE for the next working day** for full individual nutritional assessment, calculation of nutritional requirements and final enteral feeding regimen.