



<b>Title</b>	Best Practice Guidelines on Enteral Feeding for Adults
<b>Document Type</b>	Guideline
<b>Issue no</b>	GI001/01
<b>Issue date</b>	May 2010
<b>Review date</b>	Dec 2019 ( last updated Dec2017)
<b>Distribution</b>	Intranet
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<b>Developed by</b>	Clinical Nutrition Steering Group
<b>Equality &amp; Diversity Impact Assessed</b>	Yes

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## **Background**

This document was originally produced by a sub-group of the NHS Borders Food and Health Policy Steering Group, The Clinical Nutritional Group, which was established to standardise the care for patients who are receiving enteral tube feeding in the Borders.

The remit of the Sub-group was to review adult enteral feeding guidelines. Where possible these have been based on evidence and / or research but when this was not available some decisions are based on consensus of opinion and experience.

The main aim of this guideline is to address the current or potential needs of those patients in whom standard Dietetic and / or Speech and Language intervention may not prove sufficient to meet their nutritional demands. It is therefore intended that these guidelines should be incorporated into all practice by those involved in administering advice and care to those on artificial enteral feeds. The guideline will be reviewed 2 years after the original issue date and at least biannually or at appropriate times following this.

### **Adult Enteral Feeding Guideline Contributors**

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## Enteral Feeding Policy NHS Borders

### Indications for Enteral Tube Feeding (ETF)

- In the presence of a functioning gut

Artificial nutrition support should be considered when oral intake is absent or likely to be absent for a prolonged period >5-7 days. Early instigation maybe needed in malnourished patients. Support may also be needed in patients with an inadequate oral intake over longer periods.

Decisions to start feeding, suitable route, content, and management of nutritional support are best made by the multidisciplinary teams directly looking after the patient in consultation with the patient and their carers / family.

In cases other than Nasogastric tube feeding, such as Nasojejunal & Gastrostomy feeding, the patient should be referred to Dr Jonathan Manning.

Examples of suitable patients for enteral feeding are: -

Malnutrition associated with	Post surgery Sepsis Trauma HIV/Aids
Critical Care	Critically ill patients Ventilated patients
Neurological disease	Cerebrovascular Disease Motor Neurone Disease Multiple Sclerosis Learning Disability
Gastrointestinal disease	Oesophageal obstruction Inflammatory Bowel Disease Short bowel syndrome Pancreatic insufficiency
Cancer	Chemo or Radiotherapy Surgery
Psychiatric	Anorexia Nervosa Severe depression

## **REFERRAL For Gastrostomy placement if gastrostomy tube being considered/ advice for complex cases**

This is co-ordinated by Clinical Nurse Specialists, Gastroenterology. Contact number is (01896) 826454.

If Gastrostomy tube insertion is being considered please do not prejudice further discussions by volunteering a management plan at this stage to patient or relatives.

It would be best to say that the situation is difficult and needs further discussion before recommending the best way to proceed.

Complex cases requiring enteral feeding can be referred to the Lead Consultant with an interest in Nutrition; Dr J Manning and the Gastroenterology Nurse Specialist. They will liaise with referrer, the MDT where case based, the Dietetic team and Speech and Language Therapist when performing an assessment.

Informed consent obtained (see section below).

Ongoing support / education of patient and relatives and involvement of Nutricia Nurses who will offer training post insertion and once the patient has been discharged from secondary care.

Endoscopy slot booked for PEG insertion and liaise with ward, the patient and relatives/carers.

Pre Gastrostomy Tube insertion checklist completed

### **Informed consent for Gastrostomy tube placement and feeding (G tube)**

This is often the most difficult aspect of preparing for Gastrostomy feeding. Members of the NST will endeavour to educate the patient and their carers about the consequences of G tube insertion. If the patient is deemed not to have the capacity then the NST, on behalf of the patient, will make the decision. An incapacity form will often be in place, but will be amended subsequently in if proceeding to G tube placement. Views of the patient's family and carers will obviously be highly relevant. Those patients who have been sectioned under the Mental Health Act, as well as those with specific psychological eating disorders will require individual plans.

The following principals guide us: -

We aim to make an estimate of the patients own wishes if not apparent

We aim to help sustain a reasonable quality of life

We do not expose a patient to the hazards of either PEG insertion or feeding in futile clinical situations or where a patient's quality of life is poor

Once consent is obtained this should be documented in the medical notes.

If capacity is in doubt involve another Consultant or Consultant Psychiatrist.

## Placement of a Nasogastric feeding tube

The current make of fine bore feeding tube we use in BGH is the 8Fr Enteral UK® Nutricare ISO/SAF 90 day use, fully radio opaque. The current nasal bridle we supply is AMT Bridle 8Fr. No higher than a 12Fr fine bore feeding tube should need to be placed.

All tubes have to be NPSA compliant, have ENFIT lock connectors and are fully radio opaque (this means the tube will show up on an x ray without the guide wire being insitu)

Ryles tubes should not be used for enteral feeding but for gastric drainage only and should only be left insitu for 7-10 days as the tube can become brittle and cause ulceration to back of the throat and gullet.

You will on occasions see other types of tube that may have to be placed in theatre or in endoscopy such as a Trelumina tube or a naso Jejunal tube. These would not be placed on the ward.

### PREPARING THE PATIENT

The procedure will be fully explained to the patient and consent gained. Ensure privacy during the procedure.

Explain to the patient that they may experience watery eyes, discomfort / pressure in the nose and gagging during the initial stages of the procedure. Reassure that they will be guided through this and agree on a signal such as raising their hand for stopping.

### EQUIPMENT

Tray containing:

Nasogastric tube (fine bore tube for enteral feeding, Ryles tube for drainage and aspiration)

Gloves and white apron

Water based lubricant

30-50cc single use syringe

Non-sterile swabs

pH paper (range 0-6)

Tongue depressor

Pen torch

Vomit bowl

Tissues

Glass of water +/- straw (if the patient doesn't have swallowing difficulties)

Tape: preferably Mefix to secure to the nose and Tegaderm to fix tube to cheek.

Clean procedure trolley

### PROCEDURE

Nurse hand hygiene

Check that the patient has not had nasal surgery or has a septal deviation. Ask the patient to gently blow their nose, clearing any mucus away. Offer oral hygiene.

Measure the expected length of the tube to be passed using NEX measurement- measuring the NG tube from the tip of the nose, to the earlobe and then to the Xiphisternum (average



length in an adult is 56-60cm). The patient should be sitting upright where possible. The patient will be facing forward.

Lubricate the tube with water based lubricant (oil based lubricant can cause pulmonary complications). Maintain the patient in an upright position. Bend the tip of the tube down slightly, insert into the most patent nostril, advance slowly and gently to avoid trauma to the turbinate mucosa.

Once the tip reaches the naso-pharynx, resistance maybe felt. If so, get the patient to slightly lower his / her head, continue to gently advance the tube until correct length is reached. Secure Mefix (or similar) tape around the tube and nose and Tegaderm (or similar) to cheek. Leave any guide wire in situ in case you are required to re position tube at this stage. Aim to aspirate gastric contents. If there is difficulty ask the patient to roll slightly onto their left side to move gastric contents into the greater curvature of the stomach. If aspirate obtained, test with pH paper – looking for a value between 1- 5.5. If the pH is higher it may indicate that the tube is in the small intestine or it may be due to medications (e.g. PPI, H2 Antagonists) also if patient has just completed an enteral feed. Follow the algorithms (Appendices 3 & 4 Adult Enteral Feeding Guideline NHSB 2017) if no aspirate is obtainable.

If still not possible to obtain an aspirate after waiting and change in position or there is clinical concern over the tube's initial placement, then a CXR can be obtained -please note CXR is now second line method to confirm correct placement- do not expose a patient unnecessarily to multiple x rays. Once the position has been confirmed, by whichever means, remove and discard guidewire ( in sharps bin) and record in the Adult Unitary Record the position confirmation method - CXR report, pH testing and depth of insertion, nostril used. All fine bore feeding tubes come with a patient record sticker which should be completed and placed in unitary record

Initial placement or replacement of Nasogastric tubes should not occur overnight i.e. between 2100 and 0800 when there may be reduced support available to accurately confirm placement should ambiguity arise. If a consultant feels there is a clinical need to place NG tube in these hours then the decision and rationale must be clearly documented in the adult unitary record.

Always confirm tube position with pH testing before:

- Each feed/water via tube
- Administering medication

And after:

- Episodes of vomiting/retching or excessive coughing
- if the visible length of tube has shortened or lengthened
- if the patient develops signs of respiratory distress
- oropharyngeal suction
- patient is complaining of reflux of feed
- any new NG insertion

**Procedures that must not be used to confirm correct placement are:**

- Whoosh test( auscultation of air through the tube and heard as gurgling over the stomach with a stethoscope)
- Using blue litmus paper
- Interpreting the absence of respiratory distress as an indicator of correct positioning
- Monitoring bubbling at the proximal end of the tube
- Observing the appearance of feeding tube aspirate

### **Nasal Bridle (Nasal tube retaining system)**

Insertion of a nasal bridle should be considered if a NG tube has been dislodged on at least three occasions, if NG tube has had to be placed endoscopically, radiologically or during surgery. Nasal bridles do not prevent the patient pulling the NG tube out through the nose and in some instances out of the clip that secures the bridle and NG tube.

It is not always possible to place a nasal bridle- Contraindications are:

- Very confused patients who may continue to pull at NG tube and cause trauma to nasal septum
- Patients with facial or basal skull fractures
- Patients with grossly deviated or perforated septum
- Patients with structural deformity of the nose and naso pharynx
- Patients with clotting disorders

We aim to have as many RGN as possible trained in nasal bridle insertion. Many FY2 and Registrars can insert also. Wards should all order their own supply of nasal bridles.

NG tubes should be placed and position confirmed before bridle insertion.

Lubricate both of the bridle probes and the bridle ribbon with water based lubricant (a sachet of which is in the pack)

Place the blue probe into the nostril opposite the NG tube. Advance blue probe up to first notch. Place the white probe into the nostril with NG tube. Manipulate both probes until you can feel and hear the click of the two magnets attaching (behind the vomer bone) Remove the orange stylet and gently pull on the blue probe to pull the white probe and ribbon around the septum. Ensure equal length of ribbon out of both nostrils, cut off the ribbon above the white probe.

Place the clip (pre attached to one side of the ribbon) 1cm away from the nose to prevent pressure damage and place the NG tube into the groove and both lengths of ribbon into the ribbon groove then clip shut. Double tie ribbon below the clip and trim off excess ribbon with scissors. Keep the plectrum that comes in the pack- this is required to open the clip on the bridle should the Nasogastric tube need to be replaced or repositioned. Place the plectrum in a container clearly labelled with the patients name Affix NG tube to patient's upper cheek with Tegaderm.

Clear up and dispose of all equipment used as per NHS Borders policy.

### **REMOVAL OF THE NASOGASTRIC TUBE**

Explain the procedure to the patient.

Place a towel or clinical sheet across their chest. Flush the tube with 20-30cc of air to clear any feed/secretions that maybe lying in the tube (on removal of the tube, if these are not cleared there is a slight risk of secretions in the tube being aspirated).

Remove in one continuous motion. Offer the patient a mouthwash (unless nil by mouth) or oral hygiene.

Dispose of tube in normal clinical waste.

### **REMOVAL OF NASAL BRIDLE**

Cut only one strand of tape; gently pull both the Bridle and nasal tube out of the nose. To remove only the bridle cut both ends of the tape and remove (clip remains in place)

Great care must be taken to prevent accidental swallowing or inhalation of the tape or clip.

## **2. NASOJEJUNAL TUBE PLACEMENT**

Consultant Gastroenterologist or Surgeon usually place in theatre or endoscopy unit, rarely performed at the bedside

For ITU – naso-jejunal feeding protocol see Appendices 6a & 6b.

### 3. AFTERCARE GASTROSTOMY / PEJ TUBE / NG/NJ

ISSUE	GUIDANCE	EVIDENCE/REFERENCE
<p><b>Documentation</b></p> <p>Following enteral feeding tube insertion</p>	<p>When a tube has been placed (or replaced) document the following information in the patient's medical / nursing / unitary notes / care plans (as appropriate depending on local arrangements):</p> <p>Ensure consent to place enteral feeding tube/ to feed is documented in the medical notes. If patient is unable to give consent then the 'Adults with incapacity' form must be completed.</p> <p>Type of enteral feeding tube e.g. NJ / NG / PEG / PEJ etc.</p> <p>Date of placement.</p> <p>Time of placement.</p> <p>Make of tube.</p> <p>Batch number of tube.</p> <p>Length and size of tube (French gauge).</p> <p>Record of NG / NJ length of tube inserted.</p> <p>How position was confirmed.</p> <p>Record the external length of the Gastrostomy / Jejunostomy tube from stoma site.</p> <p>Approximate date of replacement.</p> <p>Instructions for care of the tube in first 24 hours and care booklet by manufactures to guide thereafter.</p> <p>Method of tube removal, (some gastrostomy tubes require endoscopic removal, refer to manufacturers guidelines).</p> <p>Name, signature and designation of person placing the tubes.</p>	<p>Most tubes now contain a sticker which allows you to document all of this information and place it in the Adult Unitary Document.</p> <p>Placement may also take place in Endoscopy or Theatre.</p>

<p><b>Re Feeding Syndrome</b></p>	<p><b>Definition</b>  “Severe fluid and electrolyte shifts and metabolic abnormalities associated with refeeding of a malnourished patient”. Patients are potentially at risk of life threatening cardiovascular and/or neurological sequelae. See ‘Refeeding Syndrome’ later in body of text.</p> <p>Adult patients at risk:  Body mass index less than 18.5.  Unintentional weight loss greater than 10% within last 3-6 months.  Little or no nutritional intake for more than 5 days.  Patients unfed for 7-10 days with evidence of physiological stress and depletion.  Oncology patient on chemotherapy.  History of alcohol abuse.  Patients suffering from anorexia nervosa.  Patients with Learning Disability  Chronic antacid users.  Chronic diuretic users.  Hyperglycaemia and known Diabetics.</p> <p>Consequences:  Hypophosphataemia.  Hypokalaemia.  Hypomagnesaemia.  Hypocalcaemia (often due to hypomagnesaemia).  Hypo- or hyperglycaemia.  Fluid balance abnormalities.  Vitamin deficiency.</p> <p>Treatment:  Refer to local Dietitian and electrolyte replacement protocol on the intranet</p>	<p>NICE (2006) Nutrition support in adults – Oral nutritional support, enteral tube feeding and parenteral nutrition.</p> <p>Todorovic, V &amp; Micklewright, A. (2004) A Pocket Guide to Clinical Nutrition 3rd edition, Parental and Enteral Nutrition Group of the British Dietetics Association.</p> <p>Afzaal, N, A, Addai, S Fagbemmi, A Murch, S, Thomson, M, Heuschkel, R (2002) Refeeding syndrome with enteral nutrition in children: a case report, literature review and clinical guidelines. Clinical Nutrition 21 (6) 515-520.</p>
<p><b>Medicine administration via the enteral feeding tube route</b></p>	<p>Refer to Appendix 14  Where possible medication should all be in liquid form.  Discuss with pharmacy</p>	<p>BAPEN Administering Drugs Via Enteral Feeding Tubes A Practical Guide,  NEWT guideline- pharmacy</p>

NASOGASTRIC/OROGASTRIC TUBE CARE ( orogastric tubes are rarely used in NHS Borders)		
ISSUE	GUIDANCE	EVIDENCE/REFERENCE
<p><b>How to check correct nasogastric / orogastric tube placement</b> – see Appendices 3 &amp; 4.</p>	<p>General information: Fully radio-opaque tubes with markings to enable accurate measurement, identification and documentation of their position should be used.</p> <p>Routine method for checking nasogastric tube placement: X ray is no longer the first method to confirm correct placement . The position of all first placement tubes should be by the pH of the gastric aspirate. Please refer to Nasogastric tube placement section at start of this document Following this, tube inspection, aspiration and pH assessment is the routine method for checking and confirming placement of a Nasogastric / orogastric tube. Radiography is recommended only if repeatedly struggling to get gastric aspirate. Aspiration: Test aspiration with pH paper: required pH 5.0 or less. If the aspirate has a pH of 6 or more this may indicate that the tube is incorrectly placed into the lung . Not all patients will cough when this happens <b>Do not feed.</b> Leave for an hour and try again. If in doubt remove tube and replace.</p>	

If there is difficulty obtaining an aspirate:  
Turn the patient on their side- preferably left side  
Inject air (10-20mls for adults) using a 50ml syringe. Wait 15-30 minutes and try again. Injecting air will dispel any residual fluid in the tube and may also dislodge the exit port of the nasogastric / orogastric tube from the gastric mucosa. Do not carry out auscultation( whoosh test).  
If the patient is alert, has an intact swallow and is perhaps only on supplementary feeding and is thus eating and drinking, ask them to sip a drink and aspirate the tube proceed to test aspirate as normal.

**Methods which must not be used to check tube placement:**

Auscultation of air insufflated through the nasogastric / orogastric tube.

Testing aspirate using blue litmus paper.

Interpreting the absence of respiratory distress as an indicator of correct position.

Monitoring bubbling at the end of the tube.

Observing the appearance of the aspirate.

**Securing position:**

Use Mefix or similar tape to fix at nose( not micropore or transpore)

Change nasal tape daily( this may be required more frequently if the patient has oily skin, has excess nasal secretions or is perspiring.

Ensure tube is securely fixed to cheek with Tegaderm or similar.

For frequent tube removals i.e three or more NG tube removals, nasal bridles can be considered to anchor tubes.

<p><b>Frequency of checking nasogastric / orogastric tube placement</b></p>	<p><b>Check nasogastric / orogastric tube position:</b></p> <ul style="list-style-type: none"> <li>• Following initial tube insertion.</li> <li>• Before commencement of each feed.</li> <li>• Before medications are administered.</li> <li>• If the patient complains of discomfort or feed reflux into the throat or mouth.</li> <li>• If the patient has vomited or retched violently.</li> <li>• After any severe coughing bouts.</li> <li>• After suctioning via an endotracheal or tracheostomy tube.</li> <li>• After fit / seizure.</li> </ul> <p>Any staff involved in placing and changing tubes should have received appropriate training.</p> <p>Current naso gastric tubes used in NHS Borders are replaceable after 30 or 90 days- always check this on the tube packaging  Large bore PVC NG tubes should be avoided unless there is a need for stomach aspiration/drainage/decompression. They need frequent replacement (7-14 days maximum) as they degrade on contact with gastric contents. They can also cause irritation to the nose and oesophagus, which can lead to oesophagitis and / or oesophageal ulcers.</p>	<p>Burnham, P (2000) A guide to nasogastric tube insertion Nursing Times Plus 96(8) 6-7.</p> <p>Colagiovanni, L. (1999) Taking the tube Nursing Times 95(21) 63-71.</p> <p>Tait, J (2001) Going nasogastric: current thinking in nasogastric tube techniques Complete Nutrition 1(2) 27-29.</p>
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NASOJEJUNAL TUBE CARE		
ISSUE	GUIDANCE	EVIDENCE / REFERENCE
<b>Insertion methods</b>	<p>Post pyloric placement can be difficult and various techniques are used:</p> <ul style="list-style-type: none"> <li>• Bedside – { Clinician / GI Specialist Nurse</li> <li>• X-ray – { Responsibility of Nutrition Support Team and/or Surgeon</li> <li>• Endoscopy – { Gastroenterologist</li> <li>• theatre</li> </ul>	
<b>Confirmation of nasojejunal tube position</b>	<p>Nasojejunal tube position should be placed / confirmed radiologically (or placed endoscopically) Secure nasojejunal tube with nasal fixation tape and secure residual tube firmly to cheek/neck as per NG tube instructions.</p> <p>If patient has oily skin or is sweating a lot, nasal tape and cheek fixation may need to be replaced frequently throughout the day to maintain the security of the tube.</p> <p>See comments earlier regarding use of nasal bridles to secure tubes in difficult cases.</p>	<p>Stroud, M., Duncan, H., Nightingale, J. (2003) Guidelines for enteral feeding in adult hospital patients Gut 52 (Suppl VIII) vii1-vii2.</p> <p>Cottee, S (2002) Jejunal feeding Complete Nutrition 2 (2), p32-34.</p> <p>NICE (2006) Nutrition support in adults – Oral nutrition support, enteral tube feeding and parenteral nutrition.</p> <p>Cirgin Ellett M L (2006) Important facts about intestinal feeding tube placement Gastroenterology Nursing 29 (2) 112-124. Cortrak TM enteral access system – Merck Serono</p>

<p><b>Frequency of checking nasojejunal tube position</b></p>	<p>Apart from radiology there is no reliable means of confirming tube position. p H of small bowel will &gt;/ 6</p> <p>The following may help indicate tube migration:</p> <p>Mark the position of the tube against the nostril daily using a permanent marker pen( if no marked graduations on the tube).</p> <p>Check length of external tubing daily and record centimetre marking.</p> <p>Measure and document external length of tube:</p> <p>Following tube placement and before administering feed / water / medications.</p> <p>Observe patient for signs of abdominal distension, vomiting or aspiration – this could indicate tube migration back into stomach.</p>	<p>Cottee, S (2002) Jejunal feeding Complete Nutrition 2 (2), p32-34.</p> <p>Cirgin Ellett M L (2006) Important facts about intestinal feeding tube placement Gastroenterology Nursing 29 (2) 112-124.</p>
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GENERAL TUBE CARE- Gastrostomy/NG/NJ		
ISSUE	GUIDANCE	EVIDENCE / REFERENCE
Tube Care	For extra information see section on Infection Control	
General aftercare and flushing of Enteral Feeding Tubes	<p>Gastrostomy tubes (<b>Established = placed for more than 12 weeks</b>)</p> <p>Follow manufacturer's guidelines:</p> <ul style="list-style-type: none"> <li>• if balloon Gastrostomy change balloon water every 7-10 days as per manufacturer guidelines.</li> <li>• First placement tubes : <ul style="list-style-type: none"> <li>- after 10 days rotate 360° except those with a pigtail.</li> <li>- rotate daily thereafter.</li> </ul> </li> </ul> <p>NG / NJ / Gastrostomy / Jejunostomy Tubes</p> <p>Regular flushing of the enteral feeding tube will help to reduce the risk of blockage.</p> <p>Flush the tube with water (see Infection Control Section):</p> <ul style="list-style-type: none"> <li>• before commencing feed (at least 30mls).</li> <li>• every 4 hours during continuous feeding (at least 30mls) if appropriate.</li> <li>• when feeding has finished (at least 30mls).</li> <li>• before administering medicines (at least 30mls).</li> <li>• between each medicine (at least 5mls).</li> <li>• after all medicines have been given (at least 30mls).</li> <li>• every 4 hours even when not in use (at least 30mls).</li> </ul> <p>Take care if the patient is on a fluid restriction – flushing volumes may need to be altered.</p> <p><b>DO NOT ROTATE SUTURED or UNSUTURED JEJUNOSTOMY TUBES-</b></p>	<p>Gueneter, P. Mechanical complications in long term feeding tubes. Nursing Spectrum Career Fitness Online - <a href="http://www.nursingspectrum.com">www.nursingspectrum.com</a></p> <p>Kohn-Keeth, C (2000) How to keep feeding tubes flowing freely Nursing 30(3) 58-59.</p> <p>Brennan Krupp, K and Heximer, B (1998) Going with the flow Nursing 28(4) 54-55.</p>

<b>Size of syringe</b>	Not less than a 30 / 50ml syringe to minimise the risk of tube rupture. Oral / enteral syringes only.	
<b>Managing blocked enteral feeding tubes</b>	<p>Warm water (three parts cold water and one part boiling water – ensure water is not too hot before placing down the tube) is the best flush solution for a blocked tube but soda water can be used occasionally to clear tube blockage but should not be used routinely. Gently massage along the length of the gastrostomy tube It can take 30 minutes or more for a tube to unblock</p> <p>Cranberry juice, cola drinks and pineapple juice are acidic and can cause tube blockage by protein denaturation and should not be used.</p> <p>If the patient has a balloon Gastrostomy and unable to clear blockage, remove and replace tube. Patient should have a spare tube at home, a small supply of spare tubes is held in the GI nurses treatment room- endoscopy unit BGH</p>	<p>Gueneter, P. Mechanical complications in long term feeding tubes. Nursing Spectrum Career Fitness Online - <a href="http://www.nursingspectrum.com">www.nursingspectrum.com</a></p> <p>Metheny N et al (1988) Effect of feeding tube properties and three irrigants on clogging rates Nursing Research 37(3) 165-9.</p> <p>Marcuard, SP et al (1989) Clearing obstructed feeding tubes Journal of Parenteral and Enteral Nutrition 13(1) 81-3.</p> <p>Nutricia Advanced Medical Nutrition SCC2759-02/16</p>
<b>Patient position during feeding</b>	Elevate the head and upper body to at least 30° and maintain this position during and up to 1hour after feeding. Greater than 40° upright for those patients at high risk of aspiration.	<p>Drakulovic, MB et al (1999) Supine body position as a risk factor for nosocomial pneumonia in mechanically ventilated patients: a randomised trial Lancet 354(9193): 1851-8.</p> <p>Manual Dietetic Practice Fifth edition 2014, Chapter 6.4, pg 352</p> <p>A pocket guide to Clinical Nutrition 2011, section 18 COPD 18.8</p>

<p><b>Initiating feeding regimen post enteral feeding tube insertion</b></p>	<p>Give feeds via NG / NJ once correct position confirmed and thereafter feed as prescribed by Dietitian.</p> <p>Follow post insertion care documented in unitary record Await bowel sounds post Gastrostomy placement (approx. 4 hours). Confirm bowel sounds by Medical Staff or GI Nurse and document.</p> <p>Thereafter follow water / feed regime as prescribed by Dietitian.</p> <p>The prescribed feed maybe used as soon as tube feeding starts.</p> <p>Evidence shows that early feeding (4 hours) following gastrostomy or jejunostomy tube insertion is both safe and effective.</p>	<p>Choudry, U. et al (1996) Percutaneous endoscopic gastrostomy: a randomised prospective comparison of early and delayed feeding Gastrointestinal Endoscopy 44(2) 164-7.</p> <p>McCarter, TL et al (1998) Randomized prospective trial of early versus delayed feeding after percutaneous endoscopic gastrostomy placement American Journal of Gastroenterology 93(3) 419-21.</p>
<p><b>Pump administered feed</b></p> <p><b>Bolus feeding into stomach</b></p>	<p>Follow pump operating manual.</p> <p>Up to 500ml of feed over a maximum of 2 hours can be given in one 'bolus' depending on the person's tolerance and the enteral access route. A typical bolus of 200-250ml but individual patients may tolerate more or less than this amount.</p> <p>Bolus feeds can be delivered with an enteral syringe or bolus set using a plunger, gravity or a feeding pump.</p> <p>Follow guidance as per Dietitian.</p>	<p>Bolus Feeding in Adults: A practical guide November 2017( due for review November 2020) BAPEN+BDA+BPNG+NNG, online version at <a href="http://bolusfeeding.co.uk">bolusfeeding.co.uk</a></p>

<p><b>Causes and management of nausea, bloating, vomiting and constipation</b></p>	<p><b>Causes</b>          Too rapid administration          Feed too cold          Side effects of medicines          Delayed gastric emptying</p> <p>Constipation</p>	<p><b>Checklist</b>          Reduce rate.          Ensure feed is at room temperature.          Review prescribed medicines.          Prescribe anti-emetics / prokinetics.</p> <p>Reduce rate of feed and refer to Medical staff for review.          Prescribe laxatives.          Assess patient fluid status.          Assess feed composition.          Medical / Dietetic / Nursing review.</p>	<p>McAtear, CA (1999) Current perspectives on enteral nutrition in adults A BAPEN Working Party Report, BAPEN.</p>
<p><b>Causes and management of diarrhoea</b></p>	<p><b>Causes</b>          Pharmaceutical          Infection          Other</p>	<p><b>Checklist</b>          Review recent and current drug therapy.          Stool samples for analysis.          Review fibre intake.          Review recent dietary intake.          Exclude overflow diarrhoea.          Check biochemistry.          Medical review / check stool chart.          Review techniques / procedures of administration of feed.          Reduce rate of feed.</p>	<p>McAtear, CA (1999) Current perspectives on enteral nutrition in adults A BAPEN Working Party Report, BAPEN.</p>

GASTROSTOMY STOMA CARE		
ISSUE	Guidance	EVIDENCE / REFERENCE
<p><b>Care following initial stoma formation</b></p>	<p>The following signs may occur up to 72 hours post insertion of a PEG tube. Please follow the instructions ( Appendix 9) Post Therapeutic Endoscopy Observations Instructions that will come back to the ward with the patient post PEG insertion.</p> <p><b>The following require Immediate medical attention</b></p> <ul style="list-style-type: none"> <li>• Pain during water/feed delivery</li> <li>• Any pain or distress after the procedure</li> <li>• Excessive bleeding from the stoma site</li> <li>• Leakage of fluid around the tube</li> </ul> <p><b>In the event of any of the above</b></p> <ul style="list-style-type: none"> <li>• Stop feeding/water/medication delivery</li> <li>• Seek medical advice so that the patient can be assessed and pegogram/CT scan arranged if necessary</li> </ul> <p><b>Immediate post placement care</b> Careful cleaning around the tube reduces the possibility of infection.</p> <ul style="list-style-type: none"> <li>• Carry out hand hygiene in accordance to the 5 moments of hand hygiene principles</li> <li>• Leave the external fixator in place for 7-14 days There will be post insertion swelling causing the external fixator to possibly become too tight to the skin- this will cause pain and sometimes a pressure ulcer, the Gastroenterology nurse specialist, gastroenterologist or surgeon will loosen the external fixator at this stage</li> <li>• Clean the skin around the stoma site and under the external fixator with sterile water or saline using sterile gauze that does not shed fibres. Continue this daily for seven days post insertion. Always ensure the surrounding skin and under the fixator is dried thoroughly</li> </ul>	<p>Percutaneous Endoscopic Gastrostomy Nutricia Advanced Medical Nutrition SCC2759-02/16</p>

<p><b>Daily stoma / tube care</b></p>	<p>Seven days after insertion if there is no sign of infection clean the stoma with soap and water and dry thoroughly with a soft clean cloth. Do not use moisturising creams or talc around the stoma site</p> <p>Reposition external fixator after cleaning, if appropriate. Leaving a 2-5 mm gap between fixator and skin  <b>(External fixator should not be moved for first 7-14 days unless by experienced / trained personnel)see previous page</b></p> <p>At least once a week and no more than once a day rotate the tube 360° (not sutured jejunostomy or pigtail gastrostomy placed tubes or PEJ) and reposition external fixator once stoma has healed (7-14 days). If unsure whether a tube should be rotated, check with the person who placed the tube or manufacturer guidelines.</p> <p>Once a week- 14 days, the external fixator should be moved and the tube moved in and out of the stoma to prevent buried bumper. Re position the external fixator as before</p> <p>Do not rotate the tube if the site is discharging – obtain a swab for culture.</p> <p>PEG with a Jejunal Extension:</p> <ul style="list-style-type: none"> <li>• Flush the gastric port once a day with at least 20ml sterile water( or cooled boiled water if at home). <b>DO NOT ROTATE THE TUBE AS THIS MIGHT DISLodge THE JEJUNAL EXTENSION.</b></li> </ul>	
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<p><b>Stoma problems – infection</b></p>	<p>Infection i.e. bacterial or yeast can be minimised by scrupulous hygiene of the stoma site.</p> <p>Avoid occlusive dressings as these can encourage and trap moisture and exudates.</p> <p>Obtain swab for bacteriology if any exudate or inflammation present / persists.</p> <p>Treat with the appropriate systemic antibiotic as topical preparations are not always effective. The infection is usually within the tract and not just superficial.</p> <p>If a yeast is suspected( the tube can have a bubbled or bumpy appearance- or cause burst balloon or leaking feeding port, a gastric aspirate should be sent to microbiology and treatment guided by the microbiologist. Once yeast infection is treated the tube should then be replaced if degraded.</p>	<p>Pendlebury, J. (1997) Feeding by PEG Community Nurse May p11-12.</p>
<p><b>Stoma problems – Overgranulation (a mass of inflamed granulation tissue usually associated with low grade infections)</b></p>	<p>Insufficient rotation of tube or excessive movement of the tube within the tract can cause granulation tissue to form. Also check that the external fixator is not too loose or too tight. Then</p> <ul style="list-style-type: none"> <li>• check for infection by taking a wound swab</li> <li>• after cleaning the area with soap and water apply 1% Hydrocortisone Ointment, twice daily with no dressing for 7-10 days</li> <li>• second line treatment –foam dressing cut as a keyhole and secured with tape. Change dressing daily.</li> </ul> <p>If no improvement after above treatment - seek specialist review. Sometimes silver nitrate will need to be applied topically to the overgranulation tissue.</p>	<p>Pendlebury, J. (1997) Feeding by PEG Community Nurse May p11-12.</p> <p>Lothian Enteral Tube Feeding Best Practice Statement 2013</p>



<b>Oral hygiene</b>	Good oral hygiene should be maintained in patients receiving enteral tube feeding.  A patient who is receiving all nutritional requirements via an enteral tube feeding requires regular oral care (3-4 hourly) or more frequently, as required.	NHS Borders Mouth Care Policy -
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<b>JEJUNOSTOMY TUBE CARE</b>		
<b>ISSUE</b>	<b>GUIDANCE</b>	<b>EVIDENCE / REFERENCE</b>
<b>Insertion techniques</b>	<p>Surgical Jejunostomy type of tube varies, surgical jejunostomy tubes are usually placed in NHS Lothian</p> <p>Placed at surgical laparotomy or laparoscopically.</p> <p>Not routinely done at the Borders General Hospital.</p> <p>External fixator usually sutured to skin- these do become inflamed and work loose, not practical to keep re suturing, therefore secure jejunostomy tube external fixator to the skin with Tegaderm or similar.</p>	<p>Refer to specific tube information sent from NHS Lothian, or hospital where tube has been placed</p>
<b>Daily Stoma care</b>	<p>Check length of external tubing daily and record centimetre marking.</p> <p>Ensure security of external fixator and sutures.</p> <p>Site should be cleaned daily with a clean cloth and water, and dried thoroughly.</p> <p>Avoid the use of dressings, unless exudate present.</p> <p>Reposition the external fixator after cleaning stoma site.</p>	

## INFECTION CONTROL AND HYGIENE PRACTICES

ISSUES	GUIDANCE	EVIDENCE/REFERENCE
<p><b>Hand hygiene, gloves and aprons</b></p>	<p>Hands should be washed, rinsed and dried or alcohol hand rub may be used on physically clean hands before handling feed or enteral feeding systems.</p> <p>Employees suffering from infections such as infected wounds, skin infections, sore throats, diarrhoea / vomiting must be excluded from enteral tube feeding duties and advice sought from Infection Control (in the first instance) or the Occupational Health Service.</p> <p>Non-sterile, non-powdered gloves and an apron should be worn.</p> <p>If a patient is managing their own enteral feeding tube then it is not necessary for them to wear gloves but hand hygiene should be carried out.</p> <p>Family (informal) carers in the home situation are not required to wear protective clothing but must be aware that:                      Careful hand hygiene is important                      Cuts and sores on their hands and forearms must be covered with a waterproof dressing.                      Carers should not handle enteral feeds if they have skin infections, diarrhoea or vomiting. In such situations medical advice should be sought.</p> <p>Minimal handling and an aseptic technique should be used to connect the administration system to the enteral feeding tube.</p>	<p>The British Journal of Infection Control (2003) Infection Control: Prevention of healthcare associated infection in primary and community care December 81-97.</p> <p>Journal of Hospital Infection 2001(47) – Supplement, pages 29 &amp; 31.</p> <p>Safety Action Notice April 2001: Enteral Feeding Systems: Risk of Contamination and Infection.</p> <p>Ward V. et al (1997) Preventing Hospital Acquired Infection – Clinical Guidelines.</p> <p>Anderton, A. (1995) Reducing bacterial contamination in enteral tube feeds British Journal of Nursing 4(7).</p> <p>Clinical Standards Board for Scotland (2001) Healthcare Associated Infection (HAI) – Infection Control Standard 15 – Practice: Hand Hygiene.</p> <p>Infection Control Nurses Association (June 2003): Enteral feeding – infection control guidelines.</p>

<p><b>Giving sets, Syringes and Extension sets</b></p>	<p>Hospital:</p> <ul style="list-style-type: none"> <li>• items marked 'Single use' should not be reused.</li> <li>• items marked 'Single patient use' can be reprocessed for a specific patient if the manufacturer's reprocessing instructions are followed.</li> <li>• use only oral / enteral single use syringes (purple barrel) – see Appendices 1 &amp; 2.</li> <li>• for Home (remember individual patient assessment for advice).</li> <li>• re-usable oral / enteral syringes only can be re-used (Medicina / Baxa or other). Refer to manufacturer guidelines for cleaning instructions. These syringes can be reused up to 30 times (potentially upto 7 days from first use) so frequency of changing will depend on the individual patient.</li> </ul> <p>Extension sets should be changed every week in the Community and daily in the Hospital setting. Refer to manufacturing guidelines for cleaning instructions.</p>	<p>Safety Action Notice April 2001: Enteral Feeding Systems: Risk of Contamination and Infection. Medical Device Agency August 2000: Single Use Medical Devices: Implications and Consequences for Re-use.</p> <p>NHS MEL (1999) 79: Infection Control: Decontamination of Medical Devices.</p> <p>HDL (2001) 10: Decontamination of Medical Devices.</p> <p>NPSA No. 19 March 07: Promoting safer measurement and administration of liquid medicines via oral and other enteral route.</p>
<p><b>Frequency of changing connecting tubes for skin level devices</b></p>	<p>Should not be re-used if marked 'Single Use Only' .</p> <p>For 'Single Patient Use' items, follow manufacturer's reprocessing instructions and guidance on frequency of changing.</p>	<p>Safety Action Notice April 2001: Enteral Feeding Systems: Risk of Contamination and Infection.</p> <p>Medical Device Agency August 2000: Single Use Medical Devices: Implications and Consequences for Re-use.</p> <p>NHS MEL (1999) 79: Infection Control: Decontamination of Medical Devices.</p> <p>HDL (2001) 10: Decontamination of Medical Devices.</p>



<p><b>Reconstituting feeds</b></p>	<p>General advice:</p> <ul style="list-style-type: none"> <li>• hands must be thoroughly decontaminated prior to reconstituting feeds.</li> <li>• utensils should be sterile or heat-disinfected in a dishwasher / washer-disinfector.</li> <li>• feeds must be mixed thoroughly using a non-touch technique.</li> <li>• prior to decanting, modified feeds may be stored in a refrigerator below 4°C for up to 24 hours.</li> </ul> <p>Sterile water should be used to reconstitute feeds for vulnerable patients including patients with burns and those with a compromised immune system. For other patients, cooled boiled water may be used if the source has been checked and feeds are prepared under controlled conditions which will minimise possible contamination.</p> <p>* All other references to water in this document mean sterile water in Hospital and cooled boiled water in the Community.</p>	
<p><b>Feed storage</b></p>	<p>Sterile feeds and dry powdered constituents should be stored in a clean, cool, dry area.</p> <p>Dry powdered constituents should be dated when opened and discarded following manufacturer's guidelines.</p> <p>Reconstituted feeds (i.e. non-sterile feeds) should be refrigerated at a temperature of 4°C or below until used.</p> <p>Each feeding system should be labelled with the patient's name and the date &amp; time the feed was set up and the time the feed is due for completion.</p> <p>Reconstituted feed / opened sterile feed should be discarded after 24 hours.</p>	<p>Anderton, A (2000) Microbial Contamination of Enteral Tube Feeds – How Can We Reduce The Risk? Nutricia Clinical Care.</p> <p>Bastow, MD et al (1982) Microbial contamination of nasogastric feeds Hum. Nutr.: Appl. Nutr. 36A 213-7.</p> <p>Safety Action Notice - 01/12 2001: Enteral feeding systems: risk of contamination and infection.</p>



<p><b>Hanging times for feeds</b></p>	<p>Sterile feeds - 24 hours</p> <p>Hospital:</p> <ul style="list-style-type: none"> <li>• non-sterile feeds (including modular feeds, diluted and modified sterile feeds) – 4 hours.</li> </ul> <p>Community:</p> <ul style="list-style-type: none"> <li>• Advice should be sought for individual patients to allow for a practical feeding regime.</li> </ul>	<p>Anderton, A (2000) Microbial Contamination of Enteral Tube Feeds – How Can We Reduce The Risk? Nutricia Clinical Care.</p> <p>Patchell, CJ et al (1998) Reducing bacterial contamination of enteral feeds Arch. Dis. Child. 78, 166-8.</p>
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<p><b>Decanting feed</b></p>	<p>Where possible, avoid decanting feed by using full-strength ready to use feeds.  Diluting feeds risks infection and osmolarity difficulties.  If low sodium feeds required, these can be ordered.</p> <p>If feed has to be decanted:</p> <ul style="list-style-type: none"> <li>• crown or screw capped bottles should be used in preference to cans and tetrapaks (to reduce risk of contamination).</li> <li>• visibly dirty bottles or cans should be washed under clean running water and dried with a disposable paper towel.</li> <li>• before opening the container any parts of the outside surface which are likely to come into contact with the feed while it is being decanted should be thoroughly disinfected using either alcohol spray or a separate large alcohol impregnated wipe for each container.</li> <li>• all scissors, bottle openers etc. which are used to open containers should be cleaned with hot, soapy water and disinfected (use an alcohol wipe and allow to dry) before use.</li> <li>• any items used to open containers should be identified as solely for this purpose.</li> </ul> <p>Do not 'top up' nutrient containers with sterile feeds – it is preferable to decant the total daily volume at the start of the 24-hour feeding period.</p>	<p>Anderton, A (2000) Microbial Contamination of Enteral Tube Feeds – How Can We Reduce The Risk? Nutricia Clinical Care.</p> <p>Stroud, M et all (2003) Guidelines for enteral feeding in adult hospital patients. Gut Vol 52 Suppl. vii pp Vii1- vii/2.</p> <p>Tube Feeding at Home – Nutricia Guide, Homeward Service</p>
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<p><b>Pump cleaning</b></p>	<p>Consult manufacturer's instructions.</p> <p>The pump should be cleaned before and after every episode of use.</p>	<p>Medical Device Agency 2000: Equipped to Care – the Safe Use of Medical Devices in the 21st Century.</p> <p>Nutricia Guide Homeward Service – Tube Feeding at Home</p> <p>Ward V. et al (1997) Preventing Hospital Acquired Infection – Clinical Guidelines Public Health Laboratory Service.</p> <p>Journal of Hospital Infection 2001(47) – Supplement, page 21.</p> <p>Scottish Executive Health Department Working Group (2001) The Contamination of Surgical Instruments and Other Medical Devices.</p>
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<b>GASTROSTOMY TUBE REPLACEMENT / REMOVAL:</b>		
<b>ISSUE</b>	<b>GUIDANCE</b>	<b>EVIDENCE / REFERENCE</b>
<b>Changing enteral feeding tubes.</b>	Any staff involved in changing or replacing gastrostomy tubes should have received appropriate training by either a Consultant Gastroenterologist/GI Specialist Nurse or Nutricia Homeward Enteral Nurse Specialist	
<b>Frequency of changing tubes</b>	When a tube has been placed, document the approximate time of next replacement. It is beneficial to communicate this information to the Patient, GP and / or District Nurse and carer. Always follow manufacturers guidelines. As a guide for Adult tubes: Primary placement gastrostomy tubes with internal bolster: change if required or clinically indicated Balloon replacement gastrostomy tubes: 3 - 6 months. Low profile buttons (internal retention bolster): 18 – 24 months. Balloon replacement low profile button: 3 - 6 months.	Lothian Enteral Tube Feeding Best Practice Statement 2013

<p><b>Care of sutures following insertion of radiologically inserted Gastrostomy</b></p>	<p>Around the stoma there will be three or four sutures in place often with small squares of white hard foam like material.</p> <p>Please note that the Gastrostomy tube is not held in place by the sutures. The sutures secure stomach wall to the abdominal wall to allow the stoma tract to be formed.</p> <p>These sutures/ squares of foam like material should be removed seven days post procedure by Ward Nurse or Community Nurse.</p> <p>Raise the metal fastener and cut the suture. Remove both the disc and the sponge. Internal suture material will pass through the gastrointestinal tract.</p> <p>Some bleeding is normal when removing sutures.</p>	
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<p><b>What to do when a gastrostomy tube falls out.</b></p> <p>Contact GI Nurse Specialist for advice – 01896 826000 / Ext or Page 26454</p>	<p>Adults only</p> <p>The action taken will depend on the length of time the stoma has been formed.</p> <p>If a displaced tube has a track less than 2 weeks old In this situation, the risk of disrupting the tract with leakage of feed or gastric contents into the peritoneum or abdominal wall layers is greatest.</p> <p>Only an experienced member of the GI team should attempt to gently replace the tube, tape it into place and arrange a contrast study as soon as possible. If the tube will not easily pass into the tract, no effort should be made to force it, but a fine bore NG feeding tube, or small calibre Foley catheter may be gently placed through the tract, taped in place and a contrast study arranged with a view to dilating the tract to replace with a permanent tube. <b>UNDER NO CIRCUMSTANCES SHOULD THESE TEMPORARY TUBES BE USED FOR FEEDING – THEY ARE MERELY TO MAINTAIN PATENCY OF THE TRACT.</b></p> <p>Do not try and replace the tube. Do not try to feed via a nasogastric tube. Contact GI Nurse Specialist for tube replacement (01896 – 826454 : Page 26454). <b>NB</b> - between 17.00-09.00 hours there is no out of hour's service. Cover the stoma site with a dry dressing and contact the GI Nurse or GI Consultant early the following morning. Once the tube position is confirmed (via radiological confirmation) feed as per established regimen.</p>	
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<p>What to do when a Gastrostomy tube falls out – continued.</p>	<p>If a displaced tube has a track between 2 and 12 weeks old.</p> <ul style="list-style-type: none"> <li>• Do not try and replace the tube.</li> <li>• Do not try to feed via a nasogastric tube.</li> </ul> <p>Contact specialist for tube replacement (see above). Following tube replacement arrange an x-ray “pegogram” or CT with contrast to ensure the tube is correct position. Once tube position is confirmed feed as per established regimen.</p> <p>If a displaced tube has a track over 12 weeks old A suitably trained person should try and replace the tube as soon as possible. Position can be confirmed by aspirating gastric contents (aspirate pH&lt;5.5). If any concern about tube position, arrange x-ray “pegogram” or CT with contrast to confirm tube position. Once tube position is confirmed feed as per regimen.</p> <p>Spare replacement Adult Gastrostomy tubes and spare ENFIT connectors will be held in the GI Nurses Endoscopy Treatment Room, and these will be accessible by A &amp; E during ‘out of hours’. If in any doubt contact Nutritional Support Team on 01896 - 826454, Monday – Friday 0800–1600</p>	
<p><b>Fasting prior to and after permanent Gastrostomy tube removal</b></p>	<p>There is no evidence to suggest that fasting is required before or after permanent tube removal but it may be appropriate for the patient to fast for 4 hours before the tube is removed.</p> <p>Consider the needs of the individual patient but do not remove the tube just after food or drink.</p>	





## Guidance on monitoring adult patients who are receiving enteral tube feeding in hospital

Patient monitoring should be multidisciplinary and the healthcare professionals who are involved in different aspects of monitoring will depend on the individual patient. However it should be clearly documented who is responsible for monitoring each aspect of patients care.

References: BAPEN (1999) Current Perspectives on Enteral Nutrition in Adults British Association of Parenteral and Enteral Nutrition.

Bannermann, E. Phillips, F. Pendlebury, J. and Ghosh, S (2001) Cross-sectional and prospective studies of nutritional indices after percutaneous gastrostomy European Journal of Gastroenterology & Hepatology 13 1315-1321.

Todorovic & Micklewright (2011) PENG – A pocket guide to clinical nutrition 4th edition : British Dietetic Association

Monitor	Suggested Frequency	Rationale
<b>Nutritional</b> Calculate nutrient intake from enteral nutrition and normal diet Determine actual volume of feed delivered	At start and end of feeding period as clinically indicated  Daily	To ensure that the individual is receiving the amount of nutrients prescribed to meet the nutritional requirements and that the methods of feeding are still the most appropriate.
<b>Anthropometric</b> Weight Height, BMI Skinfold thickness, mid-arm circumference if appropriate	Weekly Start of feeding Monthly	To assess ongoing nutritional status, determine whether nutritional goals are being achieved.  To take into account both body fat and muscle
<b>Biochemical</b> Refeeding bloods to include Na, K, Urea, Cr, Mg, PO4  Blood glucose Liver function tests Haemoglobin Trace elements e.g. zinc, selenium Vitamins e.g. Vit B12, Vit B2, Vit B6, Vit C Specific test e.g. 24-hour urinary urea nitrogen	If refeeding measure at start of feeding and daily for up to at least 7 days. Twice weekly thereafter.  As clinically indicated.  Rarely required as inpatient. Maybe requested if patient on longterm enteral feeding with clinical presentation of deficiencies.	To ensure the patient is metabolically stable and minimising risk of refeeding. To ensure enteral feeding is meeting requirements. Abnormalities in electrolytes should be noted and supplemented as per local guidelines <a href="http://intranet/resource.asp?uid=13183">http://intranet/resource.asp?uid=13183</a>
<b>Clinical</b> General condition and appearance Gastrointestinal function Temperature Fluid balance Position of feeding tube and stoma site if appropriate Infusion rate and pump Medicines and medicine / nutrient interactions Care of feeding tube and stoma site	Daily	To establish that the patient is tolerating the enteral feeding and that the route of administration and treatment remain appropriate. Note that enteral feeds can reduce absorption of some medicines and this may be clinically important for medicines. This applies particularly to those medicines with narrow therapeutic ranges. (See Appendix 13).

**Guidance on monitoring adult patients who are receiving enteral tube feeding in the Community setting**

Monitor	Suggested Frequency	Rationale
<p><b>Logistics</b>            Competency of patient/carer            Additional training needs            Storage facilities for feed            Position of pump and power point            Assist with problem solving            Problems with feeding pump (if applicable)</p>	<p>Initial Home Visit and reviews</p>	<p>To ensure the practicalities of feeding are safe and achievable.</p>
<p><b>Nutrition</b>            Calculate nutritional and fluid intake and compare to nutritional requirements as appropriate            Recent dietary and fluid intake using 24hour recall for those with oral intake            Compare prescribed feed versus actual feed taken            Tolerance to feeding regimen</p>	<p>Each appointment</p>	<p>To ensure that the individual is receiving the amount of nutrients prescribed to meet their nutritional requirements and that the methods of feeding are still the most appropriate.</p>
<p><b>Anthropometric</b>            Weight, BMI            Changes in weight            Mid arm circumference if appropriate</p>	<p>Each appointment</p>	<p>To assess ongoing nutritional status, determine whether nutritional goals are being achieved (e.g. maintain or improve nutritional status).            To take into account both body fat and muscle.</p>
<p><b>Biochemical</b>            Urea and electrolytes            Liver function tests            Albumin            Total protein            Haematology            Full blood count            Vitamins and Trace elements as indicated</p>	<p>As clinically indicated</p>	<p>To ensure the patient is metabolically stable and that Enteral feeding is meeting requirements. Abnormalities should be noted and where possible the Enteral feed altered to correct them. Where this is not possible they should be corrected by oral or intravenous supplementation.            Biochemical indicators should be assessed in conjunction with other markers of nutritional status and not in isolation.</p>

<p><b>Clinical</b>  Patients general condition and appearance  Gastrointestinal function including reflux  Problems with feeding tube and stoma site if appropriate  Care of tube and stoma site  Medicine and medicine/nutrient interaction if appropriate</p>	<p>Each appointment</p>	<p>To establish that the patient is tolerating the Enteral feeding and that the route of administration and treatment remain appropriate.  Ensure medications are appropriate for Enteral feed and route of administration.  (see appendix 12)</p>
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There is no evidence base for standard community testing as stated by NICE 2006. The following factors may indicate the need for more frequent or prolonged monitoring:

- renal or liver impairment
- patient regularly receiving less than prescribed volume of feed as sole source of nutrition e.g. due to poor tolerance or weight gain
- presence of malabsorption
- the patient receiving additional electrolytes or vitamins
- ongoing relevant medical illness eg: excessive diarrhoea or vomiting
- Jejunostomy feeding
- Nasogastric feeding

Use the above and clinical judgement. MINIMUM test should be Urea and Electrolytes.

## Discharge Planning for Adults on Enteral Feeding

(from Borders General Hospital to Home / Nursing Home / Community Hospital)

Issue	Action
1. Set date	<p>Inform patient / family / carer / Community staff / home delivery service</p> <p>Share information between Multi-disciplinary staff</p> <p>Hospital Dietitian to provide Community staff copy of instructions on feed type, amount, method of administration, feeding regime and equipment required (Enteral Feeding Transfer Form)</p> <p>Hospital Dietitian to organise home delivery with Nutricia- includes letter to GP to prescribe feeds.</p>
2. Co-ordinate discharge + document evidence of plan carried out	<p>Organise training pre discharge of patient / carer to include:</p> <ul style="list-style-type: none"> <li>• care of tube.</li> <li>• if NG, how to check patency/ pH before each feed and how to administer medication.</li> <li>• administration of feeds, including suitable position for feeding.</li> <li>• preparation and storage of feeds.</li> <li>• what to do if tube falls out.</li> <li>• Homeward information and contact number.</li> <li>• information and training of administration of medicines.</li> <li>• information on how to dispose of clinical waste.</li> </ul>
3. Consider home visit if required	<p>Is home environment suitable for storage and is it safe (i.e. infection control)?</p>
4. Provide Guidelines relating to infection control.	<p>How to prevent infection</p> <p>How to identify signs of infection</p> <p>Detail appropriate action to take in response to signs of infection.</p>
5. Provide guidance on efficient way of maintaining oral hygiene	<p>Give leaflet on oral hygiene.</p>
6. Day of discharge	<p>Give 7-day supply of feed and equipment.</p> <p>Spare Y connector given to patient / carer for gastrostomy tube by GI Nurse.</p> <p>Spare gastrostomy tube for patient will be organised by Community Dietitian via Homeward following discharge.</p> <p>Nursing Transfer form completed by GI Nurse, copy to District Nurse, GP, Community Dietitian, case notes.</p> <p>Care booklet and after care sheet also given to patient / carer by GI Nurse.</p> <p>List of contact numbers for Community Dietitian / District Nurse / Nutricia Homeward registration/ GI Nurse given to patient / carer ('Home on your Gastrostomy feed' Booklet).</p> <p>Enteral feeding Transfer form completed by Hospital Dietitian, copy to Community Dietitian, District Nurse, GI Nurse, case notes.</p> <p>Highlight items marked as single use for single use.</p> <p>Give contact for out of hours.</p>

## Guidance on arrangements of receiving patients who are discharged from Hospitals / other NHS areas outwith NHS Borders

### Request:

- transfer details of Enteral Feeding from Dietitian including Patient Name, Date of Birth, Address, GP, Diagnosis
- type and size of feeding tube and placement date and if appropriate, replacement date
- type, rate, volume of feeds
- information in training of administration and care of tube
- information on follow up care needed from local Dietitian and District Nurse
- home delivery details – company follow up arrangement required

### Locally

#### NHS Borders Dietitian to:

- inform Community staff, District Nurse, GP, GI Specialist Nurse
- ensure home delivery service set up
- dietetic review by telephone within 2 working days of discharge
- visit within 5 working days of discharge



## Refeeding Syndrome

Refeeding of a severely malnourished patient carries significant risks. It is important to understand the physiological status of a malnourished patient and the possible response to reintroduction of nutrition. The goal is to inhibit mobilisation of endogenous fuels and use ingested or infused nutrients to meet body nutritional requirements and rebuild lost nutrient stores. Reinstatement of injudicious nutrition can have adverse clinical consequences, often referred to as the refeeding syndrome.

Who is at risk? – Examples include patients with chronic undernutrition, chronic alcoholics, prolonged fasting, anorexia nervosa and those maintained only on intravenous hydration. Any patient who has had very little food intake for >5 days is at some risk of re-feeding problems. Nutrition support for these patients should therefore be introduced at a maximum of 50% of requirements for the first 2 days before increasing.

However, much greater care is needed in some patients, particularly those meeting any of the following criteria:

- BMI <16 kg/m<sup>2</sup>
- unintentional weight loss of >15% within the previous 3 – 6 months
- very little or no nutrient intake for >10 days
- low levels of potassium, phosphate or magnesium prior to any feeding.

Patients with two or more of the following lesser criteria are also at high re-feeding risk:

- BMI <18.5 kg/m<sup>2</sup>
- unintentional weight loss >10% within the previous 3-6 months
- very little or no intake for >5 days
- a history of alcohol abuse or some drugs including insulin, chemotherapy, antacids or diuretics

Mineral depletion: Increased metabolism and basal metabolic rate caused by refeeding causes intracellular movement of minerals. Serum levels may fall significantly. These rapid metabolic and electrolyte changes can lead to cardio-respiratory failure, pulmonary oedema, confusion, seizure, coma and death. The predominant cause is thought to be hypophosphataemia. However, hypokalaemia, hypomagnesaemia, hypocalcaemia (sometimes due to magnesium deficiency), hypoglycaemia and thiamine deficiency may all play a parallel role.

Specific areas to note:

Cardiac arrhythmias – Ventricular tachyarrhythmias occur during the first week of refeeding, often preceded by a prolonged QT interval.

Fluid overload – decreased cardiac mass and stroke volume may be present. Carbohydrate ingestion causes increased insulin levels which in turn encourages renal sodium and water resorption. This puts the patient at increased risk of congestive cardiac failure.

Gastrointestinal dysfunction – Luminal atrophy and impaired mucosal integrity may occur as well as alterations to bacterial flora. Pancreatic mass may also be reduced with reduced

exocrine function. Absorption may therefore be temporarily reduced. Significant diarrhoea can be a feature with refeeding, but normally resolves after 1-2 weeks of cautious nutritional re-introduction.

Glucose intolerance – starved patients rely on the use of fatty acids and ketone bodies as a fuel source, while glucose is conserved. Insulin's ability to stimulate glucose uptake into peripheral tissues may be impaired, which may result in hyperglycaemia and its consequences.

Monitoring and management:

Blood monitoring – Phosphate, Magnesium, Potassium and adjusted Calcium should be checked at least daily in severely malnourished, refed patients. This should continue for at least up to 5 days. This is merely an arbitrary figure and may need to continue for longer if a patient's feed cannot be titrated upwards accordingly. Normal baseline levels should not give false reassurance and dramatic fluxes of these cations can occur after feeding commences.

ECG monitoring – Ideally this should be available for all of those at risk. It should be mandatory for those with baseline ECG changes and/or known underlying cardiac disease. Daily ECG recording would be considered a point of good practice for those at moderate risk, until stable.

Cation replacement - Intravenous replacement is preferable as absorption of the enteral salts is often unpredictable and associated with increased additional GI side-effects, such as nausea and diarrhoea.

Feeding reintroduction regime – This will be co-ordinated primarily by the Dieticians and will reflect the patient's refeeding risk and route of feeding.

Refer to NHS Borders electrolyte replacement guidance

<http://intranet/resource.asp?uid=13183>



NHS Borders Department of Nutrition & Dietetics  
**'Out of hours' Enteral Feeding Regimen for Adults**



**Naso-gastric (NG) feeding only**

For use when the Dietitian is unavailable

**Safety first**

Enteral feeding is never a clinical emergency. However it may be necessary to start a feed during the weekend or over a public holiday weekend when a Dietitian is not available. Any ethical issues should be discussed with all parties and goals of feeding should be established and clearly documented in the medical notes prior to starting a feed out of hours to avoid potential dilemmas at a later date. Any feeding should be commenced as a time limited trial with clear aims and a stated review date.

If feeding is required outside Dietetic Department normal working hours (Mon to Fri 8.30am -4.30pm) the 'Out of hour's enteral feeding regimen' should be used and is available on intranet under 'Dietitians'. A referral must also be made to the Dietitians by leaving a message on our 24 hour answer phone for the Dietetic Department on ext 26450 so the patient may be fully assessed without delay on the Dietitian's return.

***Follow these precautions to ensure patient safety:-***

1. Only start a tube feed under a Doctor's direction, and once there is written confirmation in the medical notes that the feeding tube is in the correct position and safe for feeding and/or water/medications.

2. Ensure baseline U&Es, Phosphate, Calcium and Magnesium are completed before commencing the feed and checked at least daily thereafter.

If levels are outside the normal range or patient is at risk of re-feeding syndrome, ask Medical staff to correct accordingly whilst commencing NG feed. For more information, refer to the 'Electrolyte Deficiency Guidance IV Drug Monograph' which is available on the Intranet under Clinical Policies

3. Additional IV fluids may be required while the patient is on the 'Out of hours' regimen. Medical staff to assess and provide as required.

4. Maximum hanging time for enteral feed is 24 hours, discard any remaining feed and giving set.

5. To decrease aspiration risk, the patient should be at an angle of 40° during feeding, and for one hour thereafter. To allow close monitoring/ observations, any new NG feeding 'Out of hours' regimen should be administer during daytime hours (8am to 8pm).

6. If patients have diabetes, monitor blood sugars and adjust medication as required. If hypoglycaemic whilst being NG fed follow 'Treatment of hypoglycaemia for tube fed Diabetic patients' see intranet (Dietitians > Out of Hours Feeding Treatment of hypoglycaemia for tube fed Diabetic patients'. If their NG tube is displaced, immediately contact medical staff for advice.

**Equipment**

'Out of hours' Nutricia Infinity Feed Pump, giving sets and Nutrison feed can be obtained from the Kitchen by phoning 26136 (open 7 days a week 7am to 7.30pm).

Quantity of Feed administered must be recorded on the Feeding Regimen and signed when completed.

**Flushing**

Flush tube with 50ml sterile water before and after each pack of feed, and before and after any medications with a purple 60ml purple syringe.

Flush the tube with 50 ml sterile water immediately if feed is stopped for any reason.

# Guidelines for Out of Hours Feeding Regimen Commencement of Naso-gastric (NG) Feeding in Adults



## Recommended Starter Regimen

It is essential all patients for NG Feeding are referred to a Dietitian. Please leave a message on ext 26450 which will be picked up during normal office hours.

In the interim, before NG feeding is commenced the following should be confirmed:-

- That this is an appropriate treatment plan. Please discuss with medical staff and record decision in Unitary Record.
- The NG feeding route is patent and position of tube confirmed as correct by pH (<5.0) at every use.
- The patient should be in an upright position > 40° whilst being fed and fed day time only.
- If the patient is not at refeeding risk please commence Regimen1 and check refeeding bloods daily.
- If the patient is **at risk** or **high risk of refeeding** (see Table 1 below) prescribe Thiamine 100mg t.d.s and monitor Biochemistry – Urea and electrolytes, Magnesium, Phosphate daily and corrected as per refeeding guidelines and follow Regimen 1.
- If there is an **extremely high risk of refeeding syndrome** (patients in starved state with BMI<14kg/m<sup>2</sup>) use Regimen 2.
- Contact the Catering Department for an NG Starter pack of Feed, Feeding Pump and Giving set

Table 1. Criteria for determining people at risk of refeeding (NICE 2006)

<b>At Risk</b>
<ul style="list-style-type: none"> <li>• Any patient who has had very little or no food intake for more than 5 days</li> </ul>
<b>High Risk</b>
Patient has one or more of the following:- <ul style="list-style-type: none"> <li>• BMI less than 16kg/m<sup>2</sup></li> <li>• Unintentional weight loss greater than 15% within the last 3-6 months</li> <li>• Little or no nutritional intake for more than 10 days</li> <li>• Low levels of potassium, phosphate or magnesium prior to feeding</li> </ul> Or patient has two or more of the following:- <ul style="list-style-type: none"> <li>• BMI of less than 18.5kg/m<sup>2</sup></li> <li>• Unintentional weight loss greater than 10% within the last 3-6 months</li> <li>• Little or no nutritional intake for more than 5 days</li> <li>• A history of alcohol abuse or drugs including insulin, chemotherapy, antacids or diuretics.</li> </ul>
<b>Extremely High risk</b>
<ul style="list-style-type: none"> <li>• Patients in a starved state with BMI less than 16kg/m<sup>2</sup></li> </ul>

Please be aware that for any patient requiring sliding scale insulin, feed should be provided over 24 hours so the total volume per day as per Regimen 1 but divided by 24 hours and not by 10 hours.

## Regimen 1

Out of hours Naso-gastric (NG) feeding regimen for patients NOT at risk, AT RISK and HIGH RISK of refeeding syndrome

Patient name: ..... CHI:..... Date: .....

DOB: ..... Weight (kg): .....

Doctor's signature: .....

- Follow the appropriate care for NG feeding tube management. **Measure and record pH aspirate before feeding.**
- Prescribe Thiamine/Pabrinex as per the re-feeding guidelines.
- Monitor re-feeding bloods daily (U&Es, magnesium and phosphate) and correct as necessary. You may commence NG feeding while correcting electrolyte deficiency simultaneously.
- Keep upright  $>40^{\circ}$  whilst feeding and for 1 hour afterwards.
- Flush tube before and after feed and medication with 50mls sterile water
- Monitor fluid balance to ensure fluid requirements are met.

<b>Day 1</b> (Daytime feeding e.g. 0800hrs – 1800hrs or 1000hrs-2000hrs): <b>300mls Nutrison 30 ml/hr for 10hrs</b>	pH of aspirate before feeding	<b>Record of Administration</b>		
		Volume	Signature	Date

If patient tolerating feed and blood results stable, proceed to Day 2 and repeat for Day 3.

<b>Day 2</b> (Daytime feeding e.g. 0800hrs – 1800hrs or 1000hrs-2000hrs): <b>500mls Nutrison 50mls/hr for 10hrs</b>	pH of aspirate before feeding	<b>Record of Administration</b>		
		Volume	Signature	Date
<b>Day 3</b> (Daytime feeding e.g. 0800hrs – 1800hrs or 1000hrs-2000hrs): <b>500mls Nutrison 50 mls/hr for 10hrs</b>	pH of aspirate before feeding	<b>Record of Administration</b>		
		Volume	Signature	Date

## Regimen 2

### Out of hours Naso-gastric (NG) feeding regimen for patients at EXTREMELY HIGH RISK of refeeding syndrome



Patient name: ..... CHI:..... Date: .....

DOB: ..... Weight (kg): .....

Doctor's signature: .....

- Follow the appropriate care for NG feeding tube management. **Measure and record pH aspirate before feeding.**
- Prescribe Thiamine/Pabrinex as per the re-feeding guidelines.
- Monitor refeeding bloods daily (U&Es, magnesium and phosphate) and correct as necessary. You may commence NG feeding while correcting electrolyte deficiency simultaneously.
- Keep upright >40° whilst feeding and for 1 hour afterwards.
- Flush tube before and after feed and medication with 50mls sterile water
- Monitor fluid balance to ensure fluid requirements are met.

**Using the patient's current weight select the appropriate feeding rate from the table below.**

<b>Day 1</b> (Daytime feeding e.g. 0800hrs – 1800hrs or 1000hrs-2000hrs):  <b>Nutrison      ml/hr for 10hrs</b>	pH of aspirate before feeding	<b>Record of Administration</b>		
		Volume	Signature	Date

If patient tolerating feed and blood results stable, proceed to Day 2 and select appropriate feeding rate from table below and repeat for Day 3.

<b>Day 2</b> (Daytime feeding e.g. 0800hrs – 1800hrs or 1000hrs-2000hrs):  <b>Nutrison      mls/hr for 10hrs</b>	pH of aspirate before feeding	<b>Record of Administration</b>		
		Volume	Signature	Date
<b>Day 3</b> (Daytime feeding e.g. 0800hrs – 1800hrs or 1000hrs-2000hrs):  <b>Nutrison      mls/hr for 10hrs</b>	pH of aspirate before feeding	<b>Record of Administration</b>		
		Volume	Signature	Date

Patients weight	Rate for Extremely High risk re-feeding over 10 hours	
	Day 1	Day 2 & 3
25kg	12ml/hr	25ml/hr
30kg	15ml/hr	30ml/hr
35kg	18ml/hr	35ml/hr
40kg	20ml/hr	40ml/hr
45kg	22ml/hr	45ml/hr
50kg	25ml/hr	50ml/hr

## Standard operating procedure (SOP) for Established Enteral Feeds admitted to BGH

<http://intranet/resource.asp?uid=32355>

The above hyperlink takes you to the flow chart for guidance on patients who are on established enteral feeds (PEG/PEJ/JEJ/NG) in the community who have been admitted at weekends or public holidays.

Please ensure the dietitian is contacted by phoning extension 26450 and leaving a message as soon as possible.

## Diabetic Tube Fed patients

<http://intranet/resource.asp?uid.=32328>

The above hyperlink takes you to the word document for the Treatment of Hypoglycaemia for Tube-fed Patients who have Diabetes.

### TREATMENT OF HYPOGLYCAEMIA FOR TUBE-FED PATIENTS WITH DIABETES

If patient is on an enteral feed and their BM is  $<4\text{mmol/L}$ , i.e. a “true HYPO”

STEP 1. BOLUS 60mls Glucojuce i.e. 1 x bottle down feeding tube

STEP 2. WAIT 10 MINUTES and recheck blood glucose

If BM's  $>4\text{mmol/L}$  If BM still  $<4\text{mmol/L}$  bolus

proceed to STEP 3 another 60mls Glucojuce -

wait further 10 mins and

recheck blood glucose

Repeat this step until

BM  $>4\text{mmol/L}$ .

Then proceed to STEP 3

STEP 3. Restart Enteral feed( continuous or bolus) if due to restart within 4 hours anyway.

Check blood glucose HOURLY and inform Dietitian of change to feed timing.

If  $> 4\text{mmol/L}$  and feed not to restart for  $> 4\text{hours}$ , give Bolus of 60ml Glucojuce HOURLY and check blood glucose hourly until feed restarts.

Ask Dr's to consider IV Dextrose infusion.

## Resources

Tube feeding – ‘Making the decision’ – a leaflet for patients and carers – (SNDRI 2003).

Nutrition and Dietetic Department Enteral tube feeding transfer form (NHS Borders).

Gastrostomy feeding booklet – feeding details for discharge, helpful information and contact numbers, (Department of Nutrition and Dietetics, NHS Borders).

Surgical Jejunostomy feeding tube – Information for patients and carers (NHS Lothian).

Nutricia Homeward Service booklets

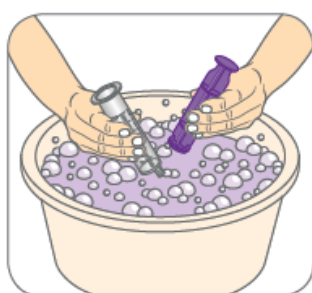
The Corflo PEG and Replacement Gastrostomy feeding tubes – Information booklet for patients and carers (Merck 2003).

## Appendices

### Appendix 1: Oral / Enteral syringes – (several brands available)



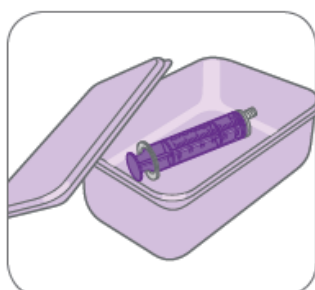
## Instructions for storage and cleaning



1. Wash the barrel and plunger separately in warm, soapy water using domestic washing-up liquid.



2. Rinse both items in cold tap water and air-dry.

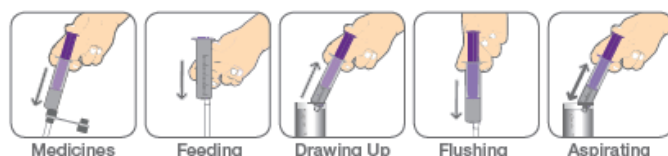


3. Store the syringe in a clean, dry container with a lid.



4. Discard the syringe after 14 days.

Enteral SAF Home syringes are designed for use in the community by patients fed enterally.



Enteral SAF Home syringes may be cleaned and reused for up to 14 days (if washed up to six times each day). If a syringe is to be reused, clean it **immediately** after each use.

#### They may also be cleaned by:

- | immersion in a cold sterilising solution, following the manufacturer's instructions. Immersion should **not** be permanent between uses
- | in a domestic dishwasher on the top rack at max temp 50 degrees Celcius and air dry with components of syringe separated. NB This may decrease the useful life of the syringe
- | may be steam sterilised in a domestic steam steriliser up to 12 times
- | do **not** autoclave any Enteral SAF Home syringes

#### Replace the syringe if:

- | there is any visible damage
- | the dose markings are no longer clear
- | the plunger becomes difficult to use

Please consult your local professional healthcare advisor before using the syringe and for local policies.

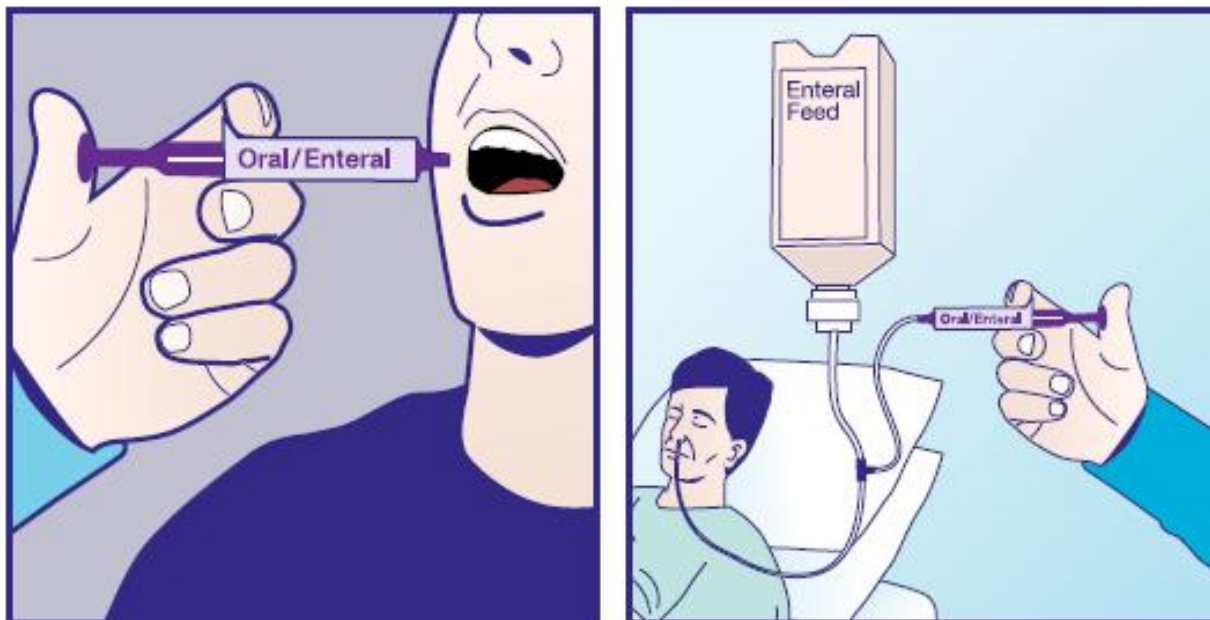
Enteral UK Ltd, Woodland House, Blackwood Hall Business Park, North Duffield, Selby, North Yorkshire, YO8 5DD T: +44 (0)1757 282 945 F: +44 (0)1757 600 545

Enteral UK is a trading name of GBUK Enteral Ltd © Copyright 2014



# Only use oral & enteral syringes

to measure and administer oral and enteral liquid medicines



The National Patient Safety Agency (NPSA) has issued safer practice recommendations on how to safely measure and administer oral and enteral liquid medicines:

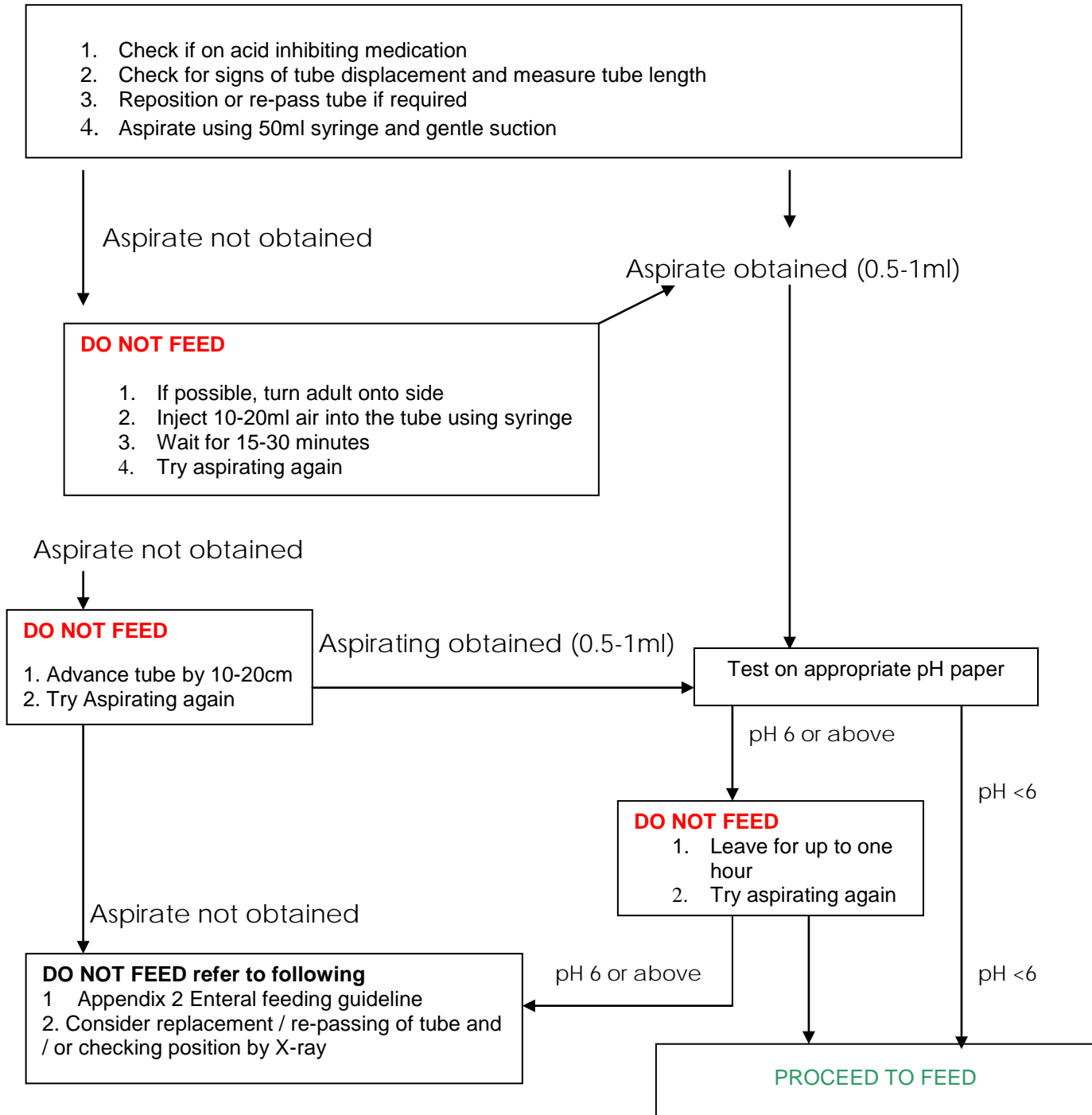
- An appropriate oral/enteral syringe should be used to measure oral liquid medicine if a medicine spoon or graduated measure cannot be used.
- Only use well-labelled oral/enteral syringes that do not allow connection to intravenous catheters or ports.
- Enteral feeding systems should not contain ports that allow connection to intravenous syringes.
- Three-way taps and syringe tip adaptors should not be used in enteral feeding systems as they allow connection design safeguards to be bypassed.
- Catheter tip syringes are commonly used in practice to measure and administer large volumes of medicines and feeds. These syringes are not sufficiently accurate to measure or administer small volumes of these medicines.

For further information, go to [www.npsa.nhs.uk](http://www.npsa.nhs.uk)

### Appendix 3: Confirming the correct position of nasogastric feeding tubes in adults

The correct position of ALL newly placed nasogastric tubes must be confirmed by pH aspirate, as per the algorithm below. A check X-ray can be used if there are concerns over the tube placement, but must be reviewed by a competent member of staff prior to commencing feeding.


The following checks are to be done before feeding and before medication.



medicina poster

# medicina nasogastric feeding

ref IN01  
(NHS CODE: FWM745)



Unit 2, Rivington View Business Park Station Road, Blackrod, Bolton BL6 5BN  
Telephone: 01204 695050 Fax: 01204 697755  
email: info@medicina.co.uk www.medicina.co.uk

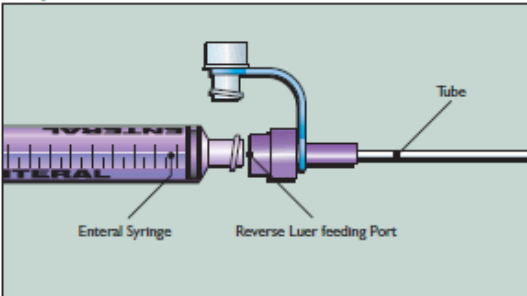
### Initial position check protocol

- 1. tube set up**  
Secure all connections and syringe (20-50ml). Stretch tube.
- 2. tube measurement**  
Estimate length of tube, stomach to nose plus nose to ear tube. (from 50-60cm adults and 30-50cm children)
- 3. insertion**  
Insert tube with head slightly forward and ask patient to swallow at mouth to tube 20cm in adult and 10cm in children size.
- 4. position check**  
Advance the tube to the depth indicated with each swallow. Do not advance against resistance. Aspirate to verify indicator.
- 5. aspiration**  
Draw back on syringe (20-50ml) if successful use the colour reference scale opposite. If unsuccessful only using methods in the aspiration guide. Do not level if aspirate cannot be obtained.
- 6. guidewire removal**  
Having obtained suitable pH reading, hold tube securely at nose and remove guidewire. **Never re-introduce guidewire with tube inside patient.**
- 7. secure tube**  
The tube can be secured to the nose with the plaster provided (P/N: NP01 adults NP02 children).
- 8. feeding**  
Attach the formula Luer on the set to the main Luer on big cap (small cap is used for medicines).

### Routine position check protocol

- At the end of the previous feed flush the tube with 10-20ml (adults) or 5-10ml (children) of water with a 20-50ml syringe then wait at least 60 minutes.
- Aspirate the tube as in (5) above. Do not feed if aspirate cannot be obtained.
- At risk and paediatric patients should be checked before every feed other patients should be checked daily in the with hospital and community protocols.
- Having obtained suitable pH reading (use pH colour guide opposite) commence feeding.


### Components



### Aspiration Guide


Because tubes are passed blind the reasons why no aspirate can be obtained are not obvious. The most common reasons are illustrated below which can be eliminated one by one using the guide. Aspirate should be obtained in most cases (93%).

**Tube above fluid level**




Advance or withdraw tube 5cm or aspirate with smaller syringe. Put patient on right side. **ASPIRATE**

**Tube in oesophagus**




Inject 20ml of air with a 20ml syringe. If the patient belches immediately tube is in the oesophagus. **ASPIRATE**

**Tube occluded in Mucosa**




Inject 20ml of air, try smaller syringe, put patient on right side, try to aspirate again. **ASPIRATE**

**No fluid in stomach**




Inject air, try smaller syringe, aspirate with smaller syringe. Wait 15-30 minutes then try again with the patient on their right side. **ASPIRATE**

**Tube in small bowel**



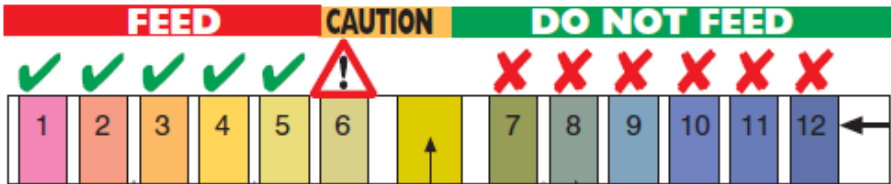
pH will normally be 6-8 and bile will usually be present. Withdraw tube 10-20cm in adults and 5-10cm in children and retry. **ASPIRATE**

**Tube occluded**



Tube may be kinked or occluded with debris. Inject 20ml of air (10ml in children) and retry. **ASPIRATE**

**FEED**    **CAUTION**    **DO NOT FEED**



reactive strip

**pH1 - 4**  
Normal Gastric activity

**pH4 - 5**  
Higher pH due to medication

**CAUTION**  
pH6 is not a reliable indicator of gastric position in adults and children but may be used with neonates following a risk assessment considering: correct measurement of tube depth, any evidence of displacement, previous successful feed at pH6 with additional X-ray confirmation. Medications, continuous feeds and amniotic fluid raise pH levels.

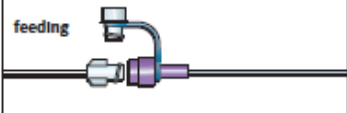
**pH7 - 9**  
Tracheobronchial Tree Normal

**pH7 - 8**  
Normal value for Small Bowel

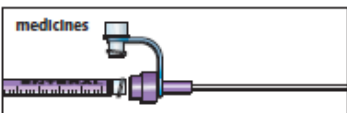
*CAUTION: These position guidelines are not meant to replace the healthcare professionals' clinical judgement and should be used in conjunction with other clinical signs, such as coughing, retching and increased respiratory distress.*

### Connections

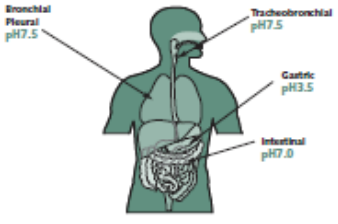
**feeding**



**medicines**

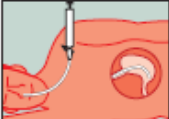


### Normal pH readings




Mean pH Reading for Aspirates


### Common Solutions



Inject air, try smaller syringe, advance and withdraw tube. **ASPIRATE**



Try syringe below the level of stomach to siphon aspirate. **ASPIRATE**



Change patient's position on to their right side. **ASPIRATE**

### Aspiration Guide

**aspirate not obtained**

- advance or withdraw tube (10-20cm (adults) or 5-10cm (children))
- Inject 20ml air with 20-50ml syringe (adults) 10ml (children) try this a couple of times
- Wait 30-60 minutes and retry
- Change patients position to right side and retry
- put the indicator and syringe below the level of patients stomach to clear siphon effect
- use a smaller syringe (10mls you will not collapse the tube)
- remove glue and use a new glue indicator when re-introduce glue with new tube a side to patient

**aspirate obtained**

- pH 2-5 **FEED**
- pH 6-8 **DO NOT FEED**

WARD:	NAME:	<ul style="list-style-type: none"> <li>• PLEASE FLUSH WITH _____ mls OF STERILE WATER PRE/POST-FEED AND MEDICATIONS</li> <li>• KEEP UPRIGHT &gt;40° ANGLE DURING &amp; AT LEAST 30 MINUTES POST-FEEDING</li> <li>• ENSURE REFEEDING BLOODS ARE CHECKED AND REVIEWED WHERE APPROPRIATE.</li> </ul>
DATE:	ADDRESS:	
CONSULTANT:	D.O.B:	
	UNIT NO:	CHI NO:

FEED PRESCRIPTION

Date	Time	Feed/Type	Drip Rate ml/hr	Volume (ml)	Rest time	Dietitian Signature	Printed Name + Bleep

NURSING RECORD

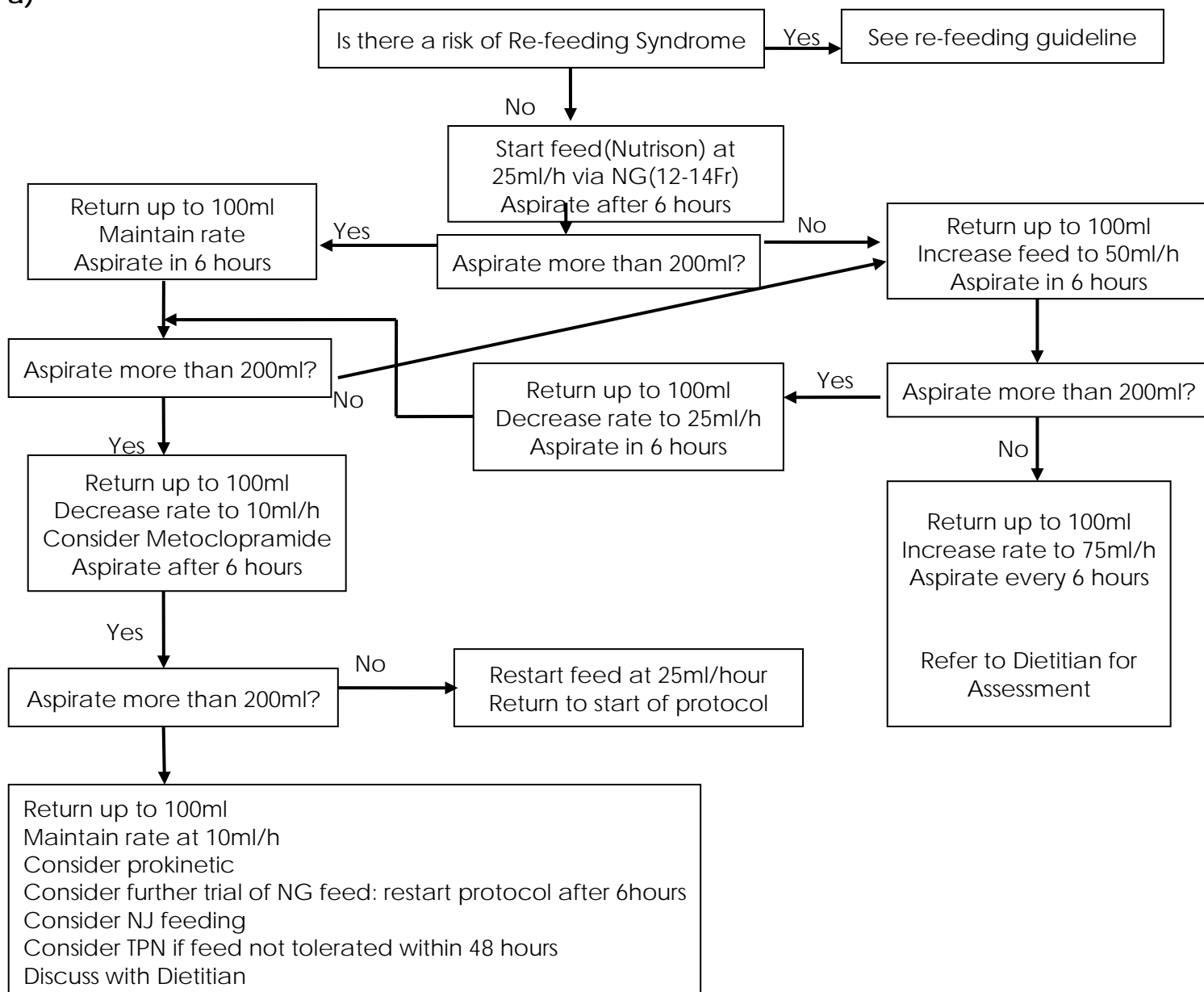
Date	pH of Aspirate	Length of tube at nose (cm)	NG tape		Feed	Time started	Signature	Amount infused	Time stopped	Signature
			Changed daily Yes/No	Secure Yes/No						



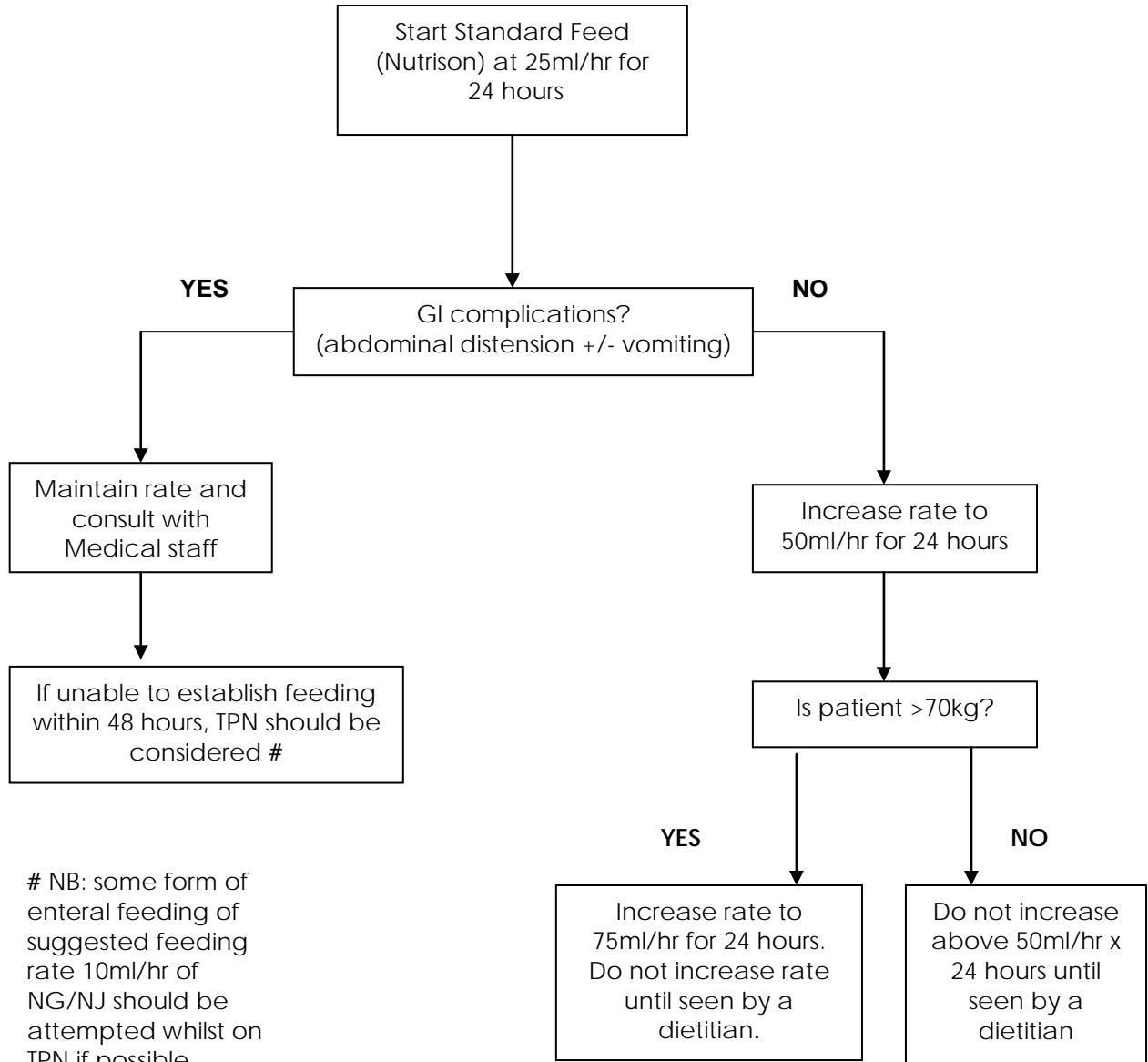


## Appendix 6: Flow chart for consideration of nasojejunal feeding in the Critical Care setting

a)



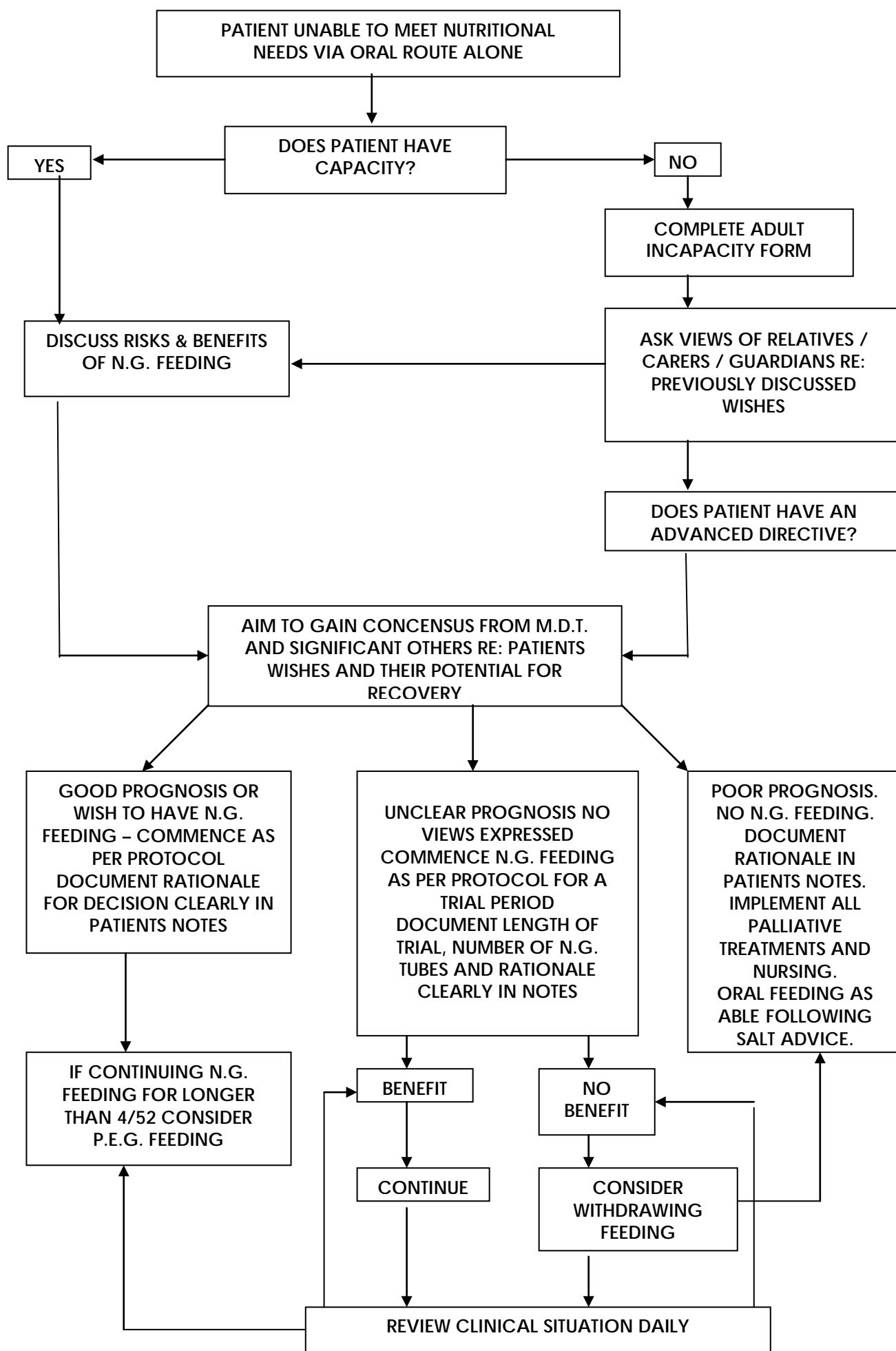
## b) Nasojejunal Feeding Protocol



Adapted from Critical Care Guidelines NHS Lothian 2006



## Appendix 7: Borders General Hospital Stroke Unit feeding flowchart



**Points:**

1. N.G. FEEDING SHOULD BE CONSIDERED BY DAY 5 AND IMPLEMENTED IF APPROPRIATE BY DAY 7. EARLY N.G. FEEDING REDUCES THE RISK OF REFEEDING SYNDROME.
2. A HOLISTIC APPROACH IS REQUIRED IN RELATION TO DECISION MAKING REGARDING N.G. FEEDING.
3. FAMILY / CARER CONSENT FOR PASSING N.G. TUBES IS NOT REQUIRED, BUT CONSENT FROM A GUARDIAN IS IF THE PATIENT DOES NOT HAVE CAPACITY. THE APPROPRIATE DOCUMENTATION SHOULD ALWAYS BE COMPLETED.

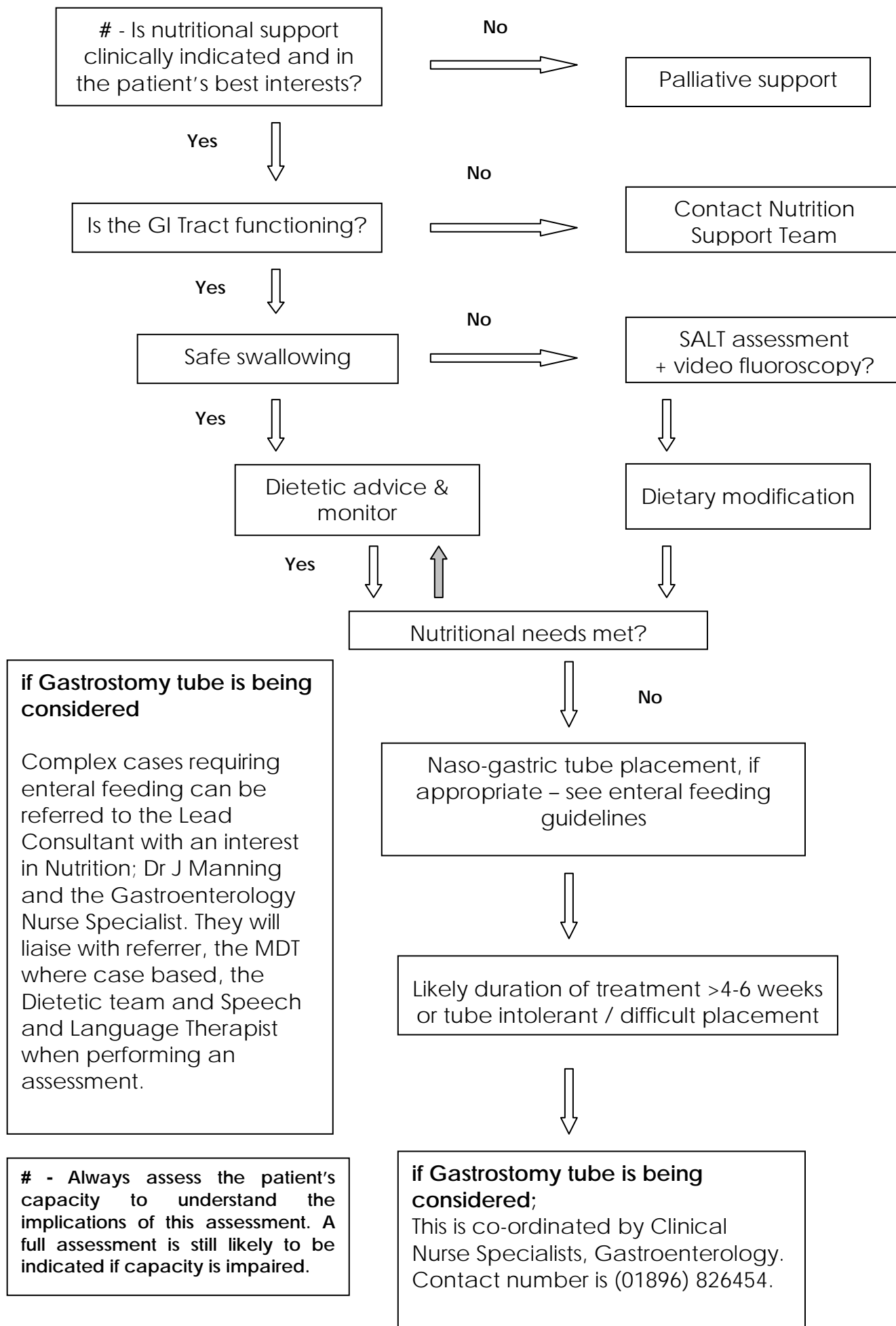
IN ALL CASES SIGNIFICANT OTHERS SHOULD BE KEPT INFORMED.

**References:-**

- LOTHIAN N.H.S. HOSPITALS - "DECISION MAKING AID FOR HYDRATION AND FEEDING".
- SIGN GUIDELINE 78 - "MANAGEMENT OF PATIENTS WITH STROKE" - IDENTIFICATION AND MANAGEMENT OF DYSPHAGIA
- N.I.C.E. - "NUTRITIONAL SUPPORT IN ADULTS" Points:
- F.O.O.D. TRIAL 2005

Appendix 8: PEG referral flow chart

**Flow chart for enteral feeding assessment and PEG placement consideration.**



# This form must be kept alongside SIRS chart

## Therapeutic Endoscopy

Post procedure ward instructions

*Patient ID Sticker*

Date

Time

### 1) Procedure (please circle)

Endoscopic haemostasis

ERCP

PEG insertion

Dilatation

Stent insertion

Polypectomy

### 2) Complications (asterisk relevant ones)

Complication	Signs
Prolonged sedation	Snoring, oxygen sat<94%
Perforation	Fever, tachycardia, peritonism, surgical emphysema
Haemorrhage	Tachycardia, shock
Aspiration pneumonia	Fever, tachycardia
Pancreatitis	Fever, tachycardia

PEG patients – OBSERVE AND DOCUMENT LEAKAGE OR BLEEDING AND ABDOMINAL PAIN – REPORT TO MEDICAL STAFF IMMEDIATELY

### 3) Ward monitoring (minimum requirements)

To be entered on Medical SIRS Chart (B1095)

#### For the first 6 hrs

1 hrly Temp, Pulse, Bp, Resp rate, Oxygen saturation, pain score, sedation score

#### For the next 12 hrs

If stable, record ALL OF THE ABOVE 2 hrly, except temp – 4hrly

**There after** – routine observations if condition is stable

Assess regularly for signs of deterioration

Contact medical team if patient becomes unwell

### 4) Specific action if patient becomes unwell

## Appendix 10: Gastrostomy care

POST-PEG PLACEMENT AND CHECKLIST IMMEDIATELY AFTER PLACEMENT	ESTABLISHED PEG – WEEKLY CARE
<p>Please refer to Therapeutic Endoscopy Post-procedure form Appendix</p>	<p>Rotate tube through 360° daily – refer to specific tube information on prescription sheet.</p>
<p>Await return of bowel sounds (usually 4 hours post insertion) before commencing dietitian’s regime. Medical staff to check).</p>	<p>Wash around tube and stoma with soap and water and dry thoroughly with a clean dry cloth.</p>
<p>Clean around the site and stoma aseptically, daily, for 48 hours. No dressing should be necessary.</p>	<p>Check that external fixator is snug to the skin. If in doubt, or the fixator has moved up the tube, aspirate gastric contents and test for acid value on pH paper.</p>
<p>No baths, only showers, during stoma tract healing period.</p>	<p>Once weekly loosen the external fixator and move PEG ‘in and out’ of stoma tract for a few seconds to ensure free movement and preventing a buried bumper.</p>
<p>Rotate the tube through 360° 24 hours after insertion but refer to information on tube type on prescription sheet.</p>	
<p>DO NOT rotate Freka tube for 10 days after insertion.</p>	

**ADULT ENTERAL FEEDING TRAINING CHECKLIST FOR DISCHARGE**  
**Guidance on Ward**

**Patient name:**

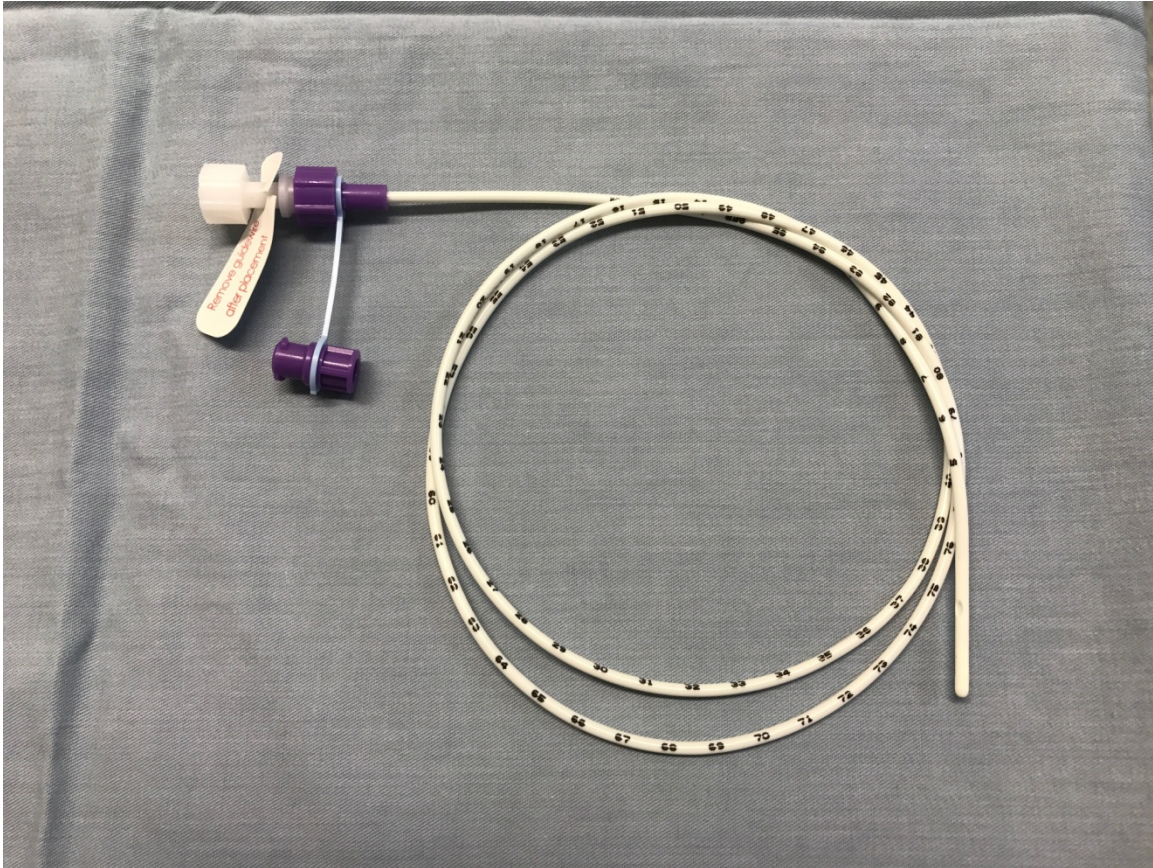
**CHI:**

Patient & Carer Training	Signature and date
<b>Feed</b>	
Aim of Enteral Nutrition <span style="float:right">D</span>	
Reason for Enteral Nutrition <span style="float:right">D</span>	
Administering bolus feed (if appropriate) <span style="float:right">D, NN</span>	
Correct position for feeding <span style="float:right">NN</span>	
Feeding regimen: <span style="float:right">D</span> <ul style="list-style-type: none"> <li>• Feed</li> <li>• Administration (pump or bolus)</li> <li>• Timings and quantities</li> </ul>	
Storing/dispose of enteral feed <span style="float:right">NN</span>	
<b>Tube &amp; Stoma Care/hygiene</b>	
Caring for the feeding tube <span style="float:right">GIN</span>	
Caring for the stoma site <span style="float:right">GIN</span>	
Checking the tube's position <span style="float:right">GIN</span>	
Dealing with stoma site infection or GI infection <span style="float:right">GIN</span>	
How and when to flush the tube <span style="float:right">GIN</span>	
Administration medication via the tube <span style="float:right">GIN</span>	
Preventing mechanical problems: <ul style="list-style-type: none"> <li>• Tube Blockage <span style="float:right">NN</span></li> <li>• Misplacement <span style="float:right">NN</span></li> <li>• Malfunction <span style="float:right">NN</span></li> </ul>	
Securing the feeding tube <span style="float:right">GIN + NN</span>	
The principles of tube hygiene <span style="float:right">GIN + NN</span>	
Mouthcare <span style="float:right">NN</span>	
<b>Equipment/Set up</b>	
Operating enteral feeding pump <span style="float:right">NN</span>	
Setting up the equipment <span style="float:right">NN</span>	
What to do when the pump alarms <span style="float:right">NN</span>	
Disconnecting the feed <span style="float:right">NN</span>	
How the home delivery company works (if appropriate) <span style="float:right">D + NN</span>	
How to obtain further supplies of non-prescribable items <span style="float:right">D + GIN</span>	
<b>Contact Information</b> <span style="float:right">D</span>	
Arrangements for follow-up and monitoring <span style="float:right">D</span>	
Contact numbers (e.g. Dietitian, Home Delivery Company, out of hours contact) <span style="float:right">D</span>	
What to do in emergency situation e.g. tube displacement <span style="float:right">GIN/NN</span>	
Document here who received the training	Patient/carer/other
D = Dietitian role                      GIN = GI. Nurse                      NN = Nutricia Nurse	



## Appendix 12: Commonly used feeding tubes

'Enteral' Nasogastric tube:



Balloon retention PEG:

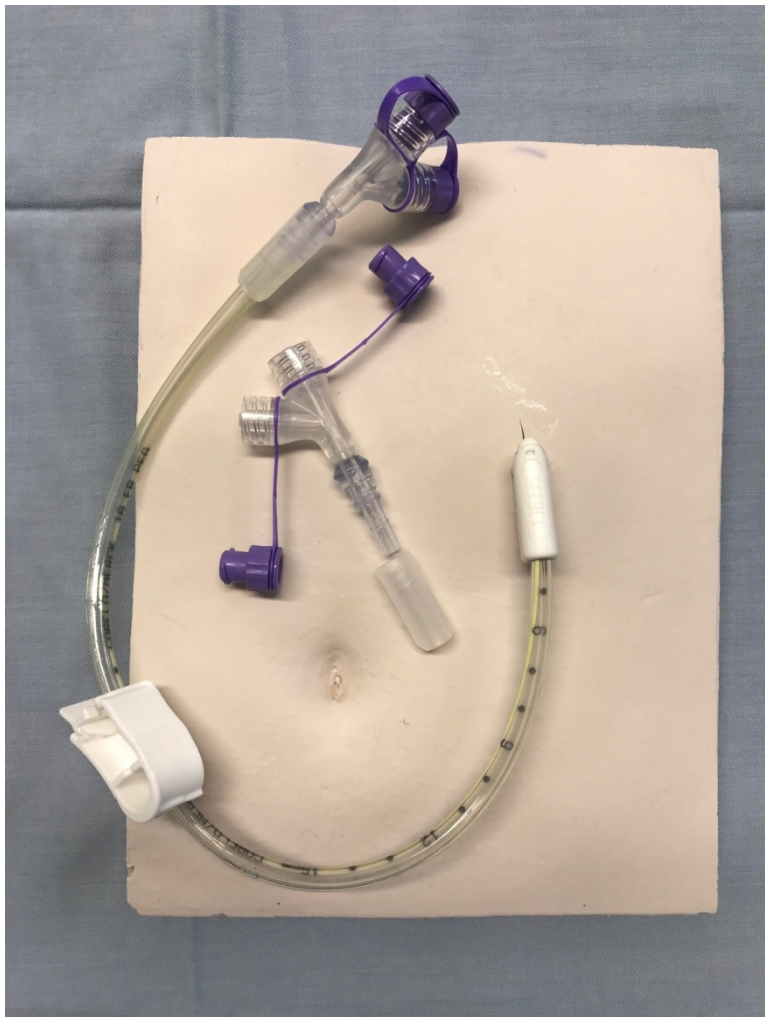




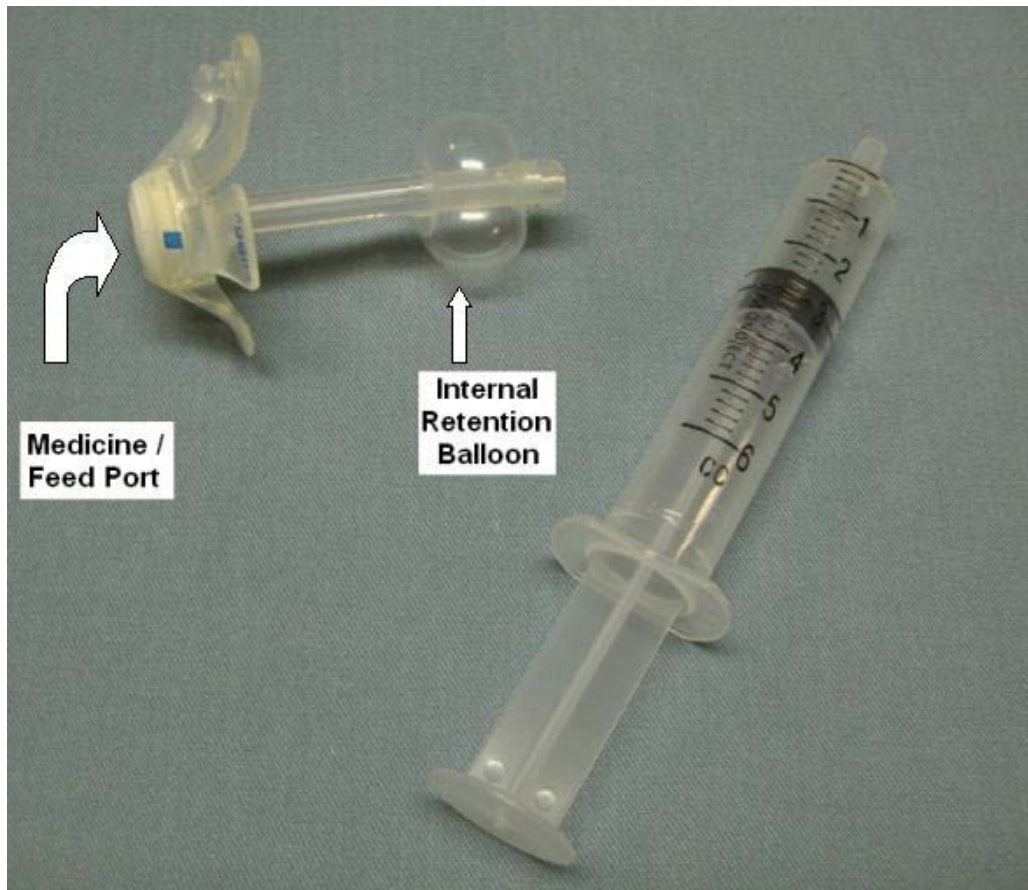
Merck Corflo PEG tube:



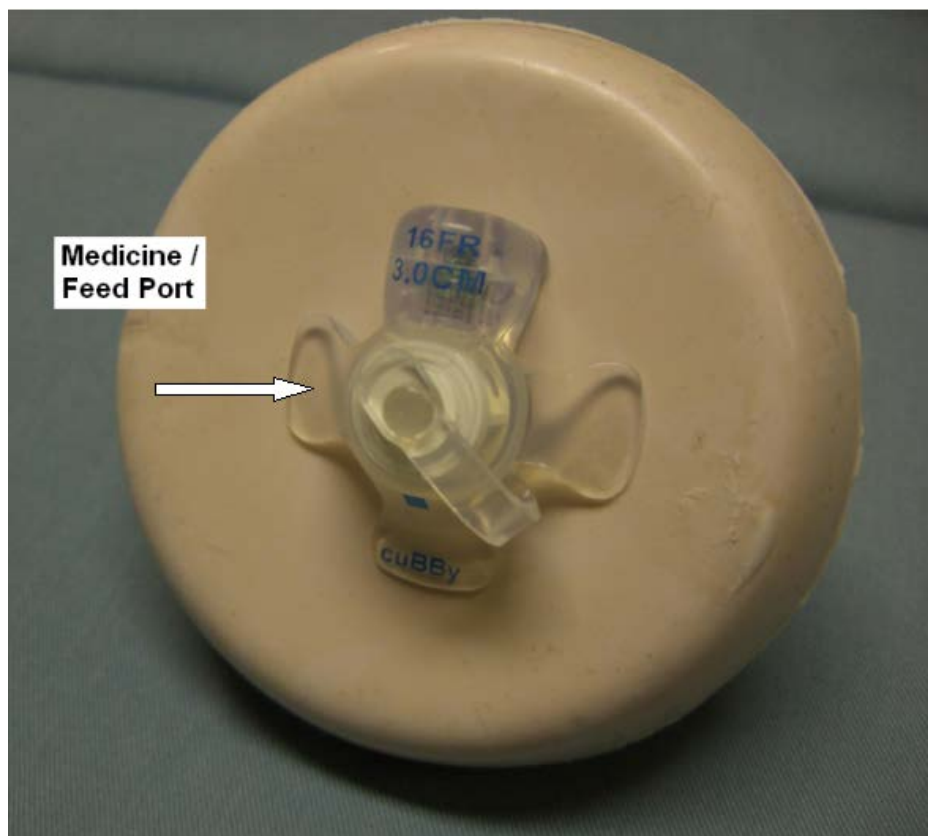
Merck Corflo PEG in situ:



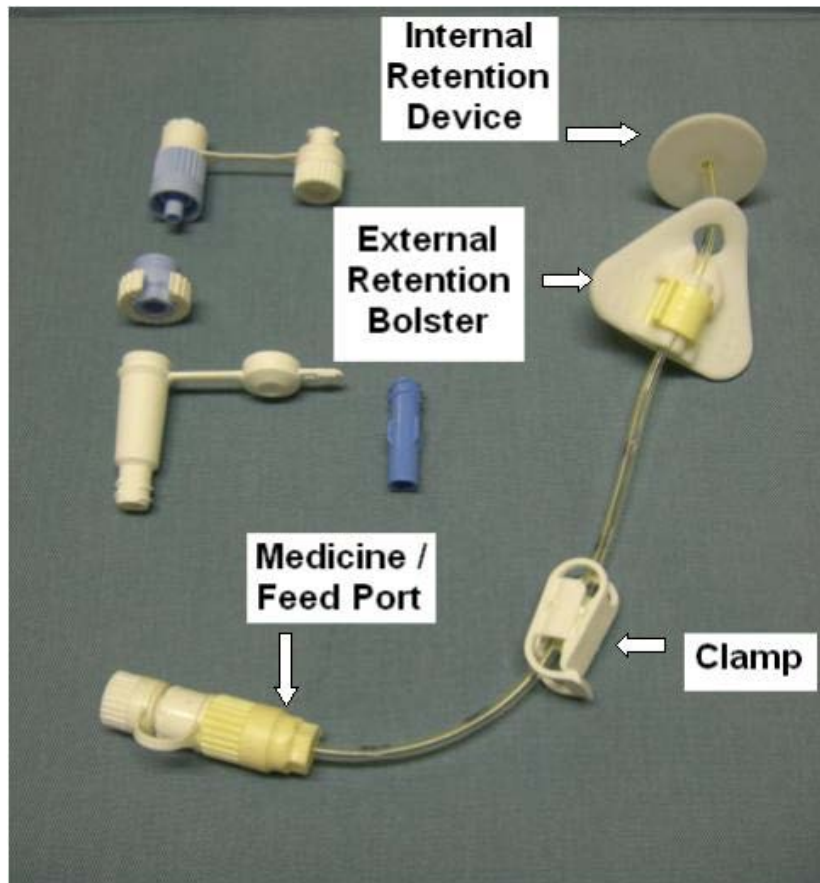
Corflo Cubby Balloon Gastrostomy:



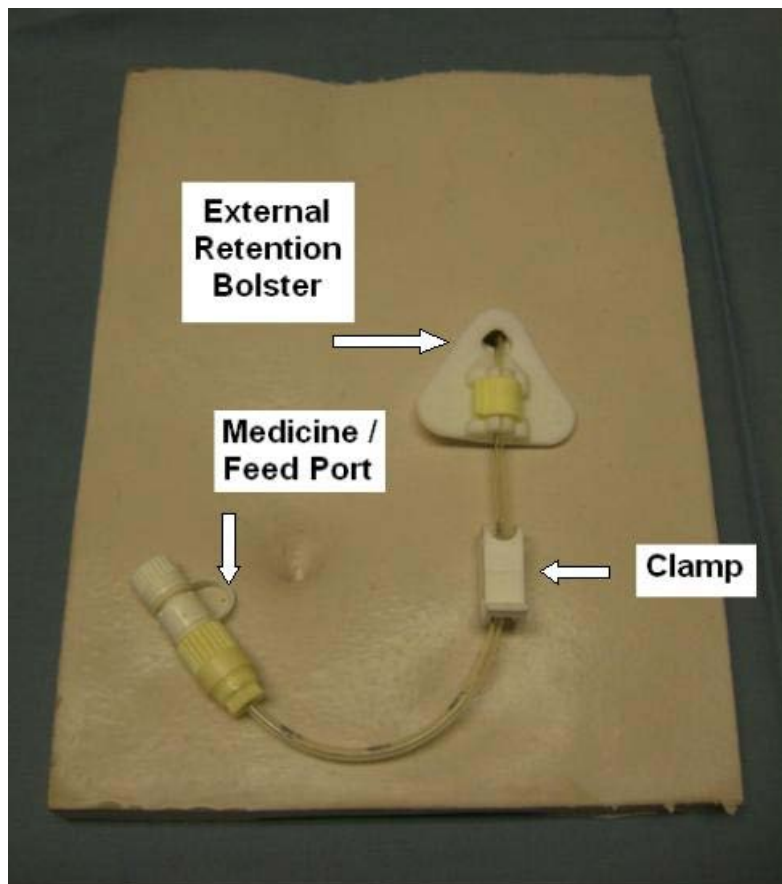
Corflo Cubby Balloon Gastrostomy in situ:



Freka Fresenius PEG:



Freka Fresenius PEG in situ:



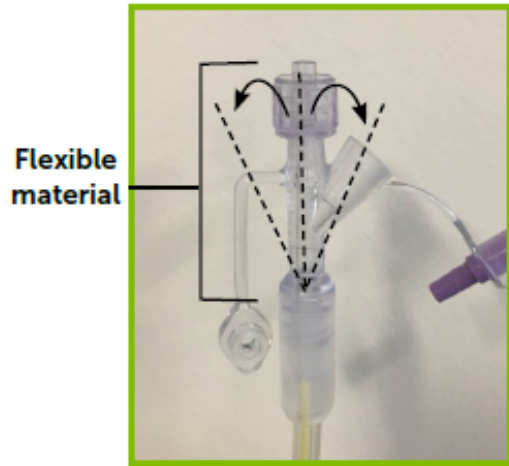
CORFLO® PEG Y Adapter  
with ENFit® Connectors



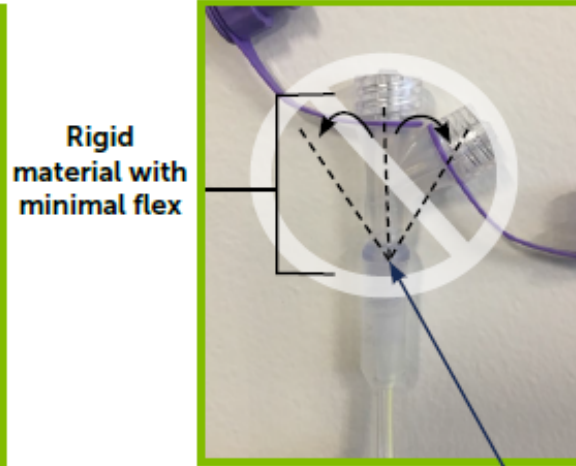
## Patient Use Recommendations

### YOUR CORFLO® PEG Y ADAPTER HAS CHANGED FROM FLEXIBLE STEM TO RIGID STEM!

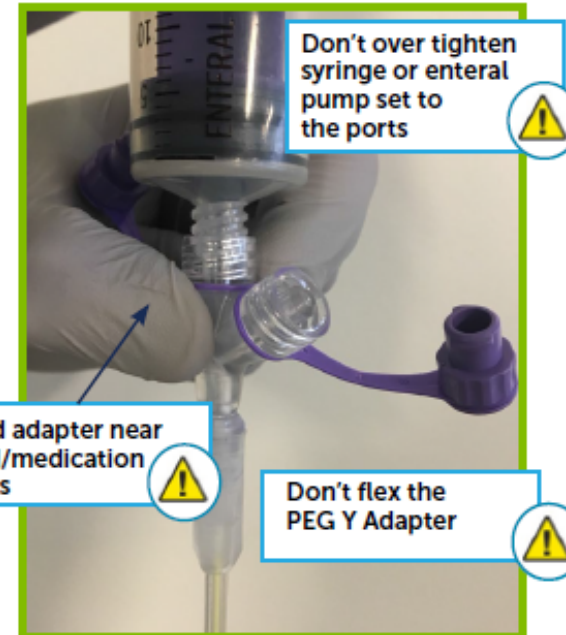
PEG Y Adapter  
without ENFit® Connectors



PEG Y Adapter  
with ENFit® Connectors



PEG Y Adapter  
with ENFit® Connectors  
Patient Use Recommendations



Corpak has received reports of breakage occurring at the stem. As a result, we have made modifications to increase the bonding strength of the adapter. However, it is important to not use a twisting motion or add extra stress to the adapter.

For more information, please visit [www.halyardhealth.co.uk](http://www.halyardhealth.co.uk)



\*Registered Trademark or Trademark of Halyard Health, Inc. or its affiliates. © 2016 HYH. All rights reserved. C161742  
© Registered Trademark or Trademark of Global Enteral Device Supplier Association, Inc. Used with permission.

## Appendix 14: Drug Administration via Enteral Feeding Tubes

See also Appendices 1 & 2.

### KEY POINTS

Rigorous Medication Review is essential when a patient requires PEG feeding to simplify and minimise Drug Regimes

Always check with a clinical pharmacist for alternative formulations and / or routes of administration before considering unlicensed PEG administration.

Drugs should only be put down a feeding tube as a last resort. There may be little information available to support use via this route. The prescriber takes responsibility for this 'off-license' use.

It is therefore sensible to minimise such use and to keep numbers of drugs administered in this way to a minimum.

### Note:

Patient response to drugs administered via enteral feeding tubes can be unpredictable. Drugs may have a greater or lesser therapeutic effect than when given by the oral route. The onset and duration of effect may be affected. Side effects, particularly those involving the gastrointestinal system, are likely to be exacerbated. The side effects of drugs which have been given by an unlicensed route are also the responsibility of the prescriber.

\* WATER - See 'Infection Control and Hand Hygiene Section'.

Whenever water is specified in this Appendix to aid medication administration via PEG tubes, these instructions must be followed:

Hospital patients - use sterile water

Community patients - use cooled / boiled water (discarded after 24 hrs)

### # SYRINGE AND NEEDLE

Extreme care is needed when using syringes to draw up liquid / dispersed medicines for administration by enteral feeding tubes. Only use an oral or bladder syringe (preferably an 'oral / enteral' syringe). Fatalities have resulted from accidental intravenous administration of drugs intended for enteral use. The minimum syringe size should be 50ml, to avoid rupturing the end of the PEG tube with rapid administration from the smaller syringe.

## Review process for patients on oral medication who have had an enteral feeding tube fitted.

Nursing staff should contact their Clinical Pharmacist when a patient previously on oral medication has had an enteral feeding tube fitted and is likely to have medication administered via this route. Medication designed for a specific route and method of administration will produce a more predictable response when given by the intended route than when given via an enteral feeding tube.

### Step one

Can the current oral medication be administered by an alternative route to avoid PEG administration? (CHECK BNF. If unclear consult Pharmacist)

The following alternative route is only if there is absolutely no other option, in view of infection risks:

PARENTERAL	eg. Intravenous, intramuscular and subcutaneous injections
------------	--

### Step two

Can the current oral medication be changed to another other medication with similar mode of action, which has a more suitable method of administration? Acceptability of the alternative route must be confirmed with the patient.

### Step three

Does the drug come as a liquid or as a dispersible / soluble tablet, which is the preferred formulation for administering through the enteral feeding tube? (a few drugs are available as more concentrated liquids for administration as drops)

Many sugar-free liquids contain sorbitol, an artificial sweetener, which is a laxative and can result in abdominal cramping and diarrhoea. Sorbitol has an accumulative effect and it is therefore important to minimise the intake of sorbitol where possible. Cost may be an issue when the drug is only available in paediatric preparations and large volumes will be required BUT blocked tubes are expensive too.

Pharmacist may be able to obtain a 'special' liquid version from a specialist manufacturing company

### Step four

When changing from solid to liquid dosage forms should any dose changes be made? If changing from slow release tablets / capsules to liquid it may be necessary to decrease the dose and increase the frequency of administration. Some drugs have a different bioavailability when being changed from a tablet to a liquid, e.g. digoxin. Other drugs contain a different salt of the drug in the liquid and tablet form, e.g. phenytoin.

### Step five

Document in the Adult Unitary record all medicines that the patient is currently taking. Discuss with ward or community pharmacist that the patient is going to require medications enterally.

Standard tablets

Crushing should be avoided if possible. If crushing is the only option then the tablets should be crushed well enough to prevent clogging of the tube, using a tablet crusher, available from pharmacy, or, in the home situation, between 2 clean metal spoons if no tablet crusher

available. Care should be taken when crushing drugs which have a high incidence of allergic reactions e.g. antibiotics and chlorpromazine.

#### Dispersible and effervescent formulations

These are low in osmolality and will not cause diarrhoea. Most dispersible and effervescent formulations contain sodium, which may need to be taken into account in sodium restricted patients.

#### Sugar Coated (s/c) and film-coated (f/c) Tablets

These tablets are usually coated to improve appearance or to mask unpleasant taste. They are usually suitable for crushing. However the presence of a coating may make crushing difficult and increase the probability of the drug blocking the enteral feeding tube. Ensure that the coating is well broken up and that the feeding tube is flushed well after the dose.

#### **The DON'T List:**

Don't crush tablets in a plastic container as the drug may adhere to the plastic.

Don't use boiling water to dissolve tablets as it may affect drug bioavailability.

Don't leave any medicines for PEG use unattended in syringes.

Don't administer any medicine down the PEG tube if you have not prepared it yourself.

Don't crush enteric coated preparations

Designated as e/c in the BNF.

The enteric coating is designed to prevent drug dissolution in the stomach and to promote absorption in the small intestine. If the tablet is crushed and passed down the enteral feeding tube, undesirable side effects may occur. Side effects could include irritancy on the stomach or a decrease in drug effectiveness. When crushed, the tablet will break into small chunks that bind together when moistened and subsequently clog enteral feeding tubes.

Don't crush buccal and sublingual tablets

Drugs formulated in these dosage forms such as prochlorperazine (Buccastem), or GTN, are designed not to pass through the stomach and so avoid the first pass metabolism effects via the liver. If these tablets are passed down the enteral feeding tube decreased drug absorption will occur. Buccal and sublingual tablets are suitable to be used as normal in most cases even if a patient becomes nil by mouth, provided that the patient is still producing normal quantities of saliva.

Don't crush slow / modified / sustained / controlled release or long acting (labelled SR,SA, MR, M/R, LA, XL,Continus, Durules, Spansule, Retard)

The sustained release coating allows the drug to be released gradually over time. If the tablet is crushed and passed down the enteral feeding tube an increase in the expected peak plasma level may occur. The patient will be initially exposed to 2-3 times the normal dosage which will increase the chance of side effects, and then later the drug will not last for the full dosage interval resulting in a lower plasma level.

Don't crush cytotoxic, prostaglandin or hormone antagonist preparations

All staff should avoid contact with these drugs. Seek advice from pharmacy.

Chewable tablets sometimes have to be crushed please always check with the pharmacist

#### **Directions for administration of tablets**

##### Crushing tablets

Crush the tablet in a tablet crusher in the Hospital situation. In the home, crushing between two metal spoons is permissible if no tablet crusher available.

Add 15-30ml of water\* to the mortar and mix with the powder just before administration

Draw up the solution in an oral syringe or a bladder syringe.#  
Administer the solution through the enteral feeding tube.  
Rinse out the mortar with water\* and add the remaining solution to the tube.  
Flush the tube post dose with 15-30ml of water\*.

#### Dispersible / disintegrating tablets

Tablets may disintegrate in water without crushing even if not classified as a dispersible tablet.  
For either type of tablet, it should be prepared as follows:  
Place intact tablet into the barrel of an oral or bladder syringe.#  
Replace the plunger and draw up 10-15ml of water\*  
Replace cap, allow tablet to dissolve.  
Shake well and administer dose down the enteral feeding tube.  
Flush the tube post dose with 15-30ml of water\*.

#### Effervescent tablets

Tablets will effervesce and disperse when placed in water. The resulting gases need to be allowed to escape.  
Pour 50ml water\* into a beaker.  
Add the tablet to the water\*.  
Wait for the effervescent reaction to finish.  
Swirl the solution and draw it all up into a 50ml oral / enteral syringe  
Administer the dose down the enteral feeding tube.  
Flush the tube post dose with 15-30ml of water\*.

### **Directions for administration of liquids**

#### Liquids

Liquids are the preferred formulation for administration via the enteral feeding tubes, when available. It is usually not necessary to dilute liquid preparations with water\* just prior to administration, unless very thick.  
Flush the tube post dose administration with 15-30ml water\*.

#### Syrups

Syrups have viscous and hyperosmolar properties. It is best to dilute the syrup with the same volume of water\*.  
If the syrup is one of several drugs to be administered it is preferable to administer the syrup last.  
Flush the tube post dose administration with 15-30ml of water\*.

#### Suspensions

The majority of suspensions are suitable for administration via the enteral feeding tube. However, some e.g. lansoprazole suspension, may block the tube. Consult Clinical Pharmacist for further advice.  
Flush the tube post dose administration with 15-30ml water\*.

### Directions for administration of capsules

#### For dry powder hard gelatin capsules

Gently ease open the two halves of the capsule to release the powder.  
Add the powder to the pestle.  
Mix the powder with 15-30ml of water.\*  
Draw up the solution in an oral / enteral syringe



Administer the solution through the enteral feeding tube.  
Rinse out the beaker and add the remaining solution through the enteral feeding tube.

Modified release capsules e.g. propranolol SR  
Ask a Clinical Pharmacist for advice. It may be necessary to change to another preparation.

Soft gelatin capsules containing liquid e.g. nifedipine

Method one

Pinprick one end of the capsule.

Drain out the contents with an oral or bladder syringe.

Administer through the feeding tube.

Flush the tube post dose administration with 15-30ml of water.

NB some of the drug may adhere to the soft gelatin capsule and the result may be a sub-therapeutic level of the drug.

## **Problem Solving**

If in any doubt about medication administration via a PEG tube, contact the Clinical Pharmacist for your area for advice on alternative approaches and on appropriateness of individual drugs for PEG use.

N.B. As new drugs and also formulations of existing drugs are developed, information on suitability for PEG feeding is not always readily available.

What do you do if giving several medications down a PEG tube?

Do not mix various drugs together during preparation, dispersal or in the syringe. Drugs are more likely to interact with each other if mixed together directly, particularly following tablet crushing. If the tube blocks it may be difficult to determine how much of the drug has been given. Administer each drug separately, flushing between each administration.

How should you flush an enteral feeding tube? (+ See 'Tube Care' in Main Text of Guidance)  
Flush the feeding tube with 5ml of sterile water for adults between medications to prevent drug-drug interactions.

When all the medications have been administered, flush the tube with 15-30ml of sterile water for adults.

This procedure reduces the risk of tube blockage and helps with the delivery of the drug to the stomach.

If the patient is fluid restricted, consult with the Clinical Pharmacist or the Doctor.

What can be done if the tube becomes blocked? (+ See 'Tube Care' in Main Text of Guidance)

Try flushing the feeding tube with warm water, or, occasionally, if blockage persists, soda water.

N.B. Cranberry juice, carbonated cola drinks and pineapple juice are acidic and may contribute to tube blockage by protein denaturation and therefore should not be used.

Are injectable drugs suitable to be used down the tube?

Some injectable drugs are suitable for oral administration and can be given via the enteral tube for example Vancomycin and Hyoscine. Consult your Clinical Pharmacist for more information.

Is it possible to add medication to the feed?

No, don't ever add medication to feeds. There is a risk of microbiological contamination of the feed and there are difficulties in predicting the effect the medication has on the physical characteristics and stability of the feed and vice versa.

What if medicines should be taken on an empty stomach?

Give during a break in feeding: stop feed 15-30 minutes before giving medication and wait 15-30 minutes before restarting feed.

What about possible interactions between medicines?

If there are concerns over interactions with the feed and a particular medicine, or difficulty in controlling drug levels, the dose can be given during a break in feeding.

Complications of drug administration via enteral feeding tubes

There are two main consequences for absorption via the stomach when an enteral feeding tube is in place.

The delivery of drugs directly into the stomach bypasses the normal enteral route where saliva may assist degradation of the drug.

The residence time in the stomach is reduced. Absorption of drug will be impaired if prolonged contact with the acid environment of the stomach is required for drug dissolution. When a jejunostomy tube is used the acid environment of the stomach is bypassed altogether. Problems can occur for example with Ketoconazole. Ketoconazole will either not be absorbed or will only be partially absorbed when administered directly to the jejunum through a NJ or a jejunostomy tube.

### **Reasons for unpredictable serum concentrations**

Nasogastric and naso-jejunal tubes deliver feeds and drugs to the stomach and jejunum respectively. These tubes are long, fine bore tubes, with a large surface area for potential drug absorption and may block easily due to their small bore. PEG and jejunostomy tubes are short tubes with a wider bore.

#### **Reason one**

Drugs may bind to the enteral feeding tube and reduce absorption and bioavailability of the drug

Examples:

Lansoprazole suspension.

Carbamazepine Suspension.

Phenytoin Suspension.

#### **Reason two**

Nutrients in the enteral feeding solution may increase or decrease absorption of the drug from the stomach. This will consequently affect the drug levels in the body.

Highly protein bound drugs such as theophylline may interact with the protein content of the feed. This may result in decreased effects.

Some drugs may be required to be taken on an empty stomach eg. flucloxacillin and tetracyclines. Tetracyclines may bind to some components of the feed and cause a decrease in the bioavailability of the drug.

Digoxin interacts with enteral feeds, which are high in fibre, such as Jevity feed.

### **Reason three**

Diarrhoea can be a problem in post-pyloric feeding. This is partly because the jejunum lacks the reservoir effect provided by the gastric fluids in the stomach and partly because the protective action of the pylorus in the regulation of delivery of nutrients into the intestine is bypassed. Many liquid medications are hyperosmolar or hypertonic, and when administered directly into the jejunum osmotic diarrhoea and nausea will occur.

Appendix 13 adapted from:

'The NEWT Guidelines' : for administration of medication to patients with enteral feeding tubes or swallowing difficulties' 2015 edition . Wrexham Maelor Hospital Pharmacy Department (Previously North East Wales NHS Trust)

Handbook of Drug Administration via Enteral Feeding Tubes Third Edition

Lothian Enteral Tube Feeding: Best Practice Statement for Adults and Children. Jan 2007  
BAPEN Patient and Carer Guide 'Tube Feeding and Your Medicines'

Other Background Reading / Useful websites:

[www.bapen.org.uk](http://www.bapen.org.uk)

[www.bpng.co.uk](http://www.bpng.co.uk)

### **Appendix 15 PEG / PEJ tube after death**

Removal of PEG / PEJ after death.

A gastrostomy tube must be removed after death.

Most tubes are held in situ by water filled balloon or retention disc.

Wear gloves.

If gastrostomy tube has a water-filled balloon, deflate the balloon as you would a urinary catheter and pull tube out of gastric stoma and cover with a waterproof dressing such as 'sleek' to prevent leakage of gastric fluids.

OR

Cut the external part of the tube to skin level and cover stoma with a waterproof dressing such as 'sleek' to prevent leakage of gastric fluids.

Dispose of the gastrostomy tube by placing into a small yellow bag then into a yellow clinical waste bin.