



GUIDELINES FOR THE MANAGEMENT OF ENTERAL TUBE FEEDING IN ADULTS

April 2004



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SECTION 1

INTRODUCTION

Major changes have taken place in the last twenty years in the provision of nutritional support. This has been caused by a number of factors including developments in healthcare technology, changes in clinical practice and growing numbers of elderly patients. In 2002 in Northern Ireland over seven hundred people, 75% adults and 25% children, received enteral nutrition outside the acute hospital setting. These people were managed either in their own home, nursing or residential homes. The needs of some patients are complex and can be relatively short term or indefinite.

Home enteral tube feeding has developed in an ad-hoc and fragmented way in the past 20 years and multi-agency organisational arrangements together with varying degrees of local interest and/or expertise have resulted in significant variations in clinical practice and different experiences for patients.

A multi-disciplinary group (see Appendix 1) was convened by CREST in 2000, to develop guidelines for the management of home enteral tube feeding, in order to improve the effectiveness and efficiency of clinical care. A wide range of professionals have been involved in the development of these guidelines with input at various stages from professional groups, patients and representatives within government departments/agencies.

At the outset the aim was to produce guidelines for the management of home enteral tube feeding, however, it soon became evident that enteral feeding resides in two separate but interdependent settings - primary and secondary care. Decision-making and practices during a hospital admission impact on home management. These guidelines therefore include all aspects of the management of enteral tube feeding and apply to both primary and secondary care settings.

These guidelines, designed for healthcare professionals, offer clinical advice in sections 2-7 for managing the pathway of care for this group of patients, e.g.

- Need for enteral feeding identified, discussed and agreed.
- Insertion of enteral feeding tube.
- Enteral tube feeding established.
- Long term management of home enteral tube feeding.



They are not rigid protocols and should be used in conjunction with clinical judgement and take into account local service provision.

In addition the group reviewed the organisational arrangements for the provision of home enteral tube feeding and identified a number of problems with existing service arrangements, e.g.

- Fragmented/unco-ordinated follow up.
- Variations in 'hardware' used across Board areas and difficulties with patient transfers across Board boundaries.
- Inadequate systems in place for management of medical devices.
- Lack of development of community based service provision.
- Inadequate knowledge of professionals managing small numbers of patients on home feeding systems.

The group have produced guidance on 'A Model for Managing Enteral Tube Feeding' (April 2004, ISBN 1-903982-09-X). This should be read in conjunction with this document.



SECTION 2

RATIONALE FOR NUTRITIONAL SUPPORT

2.1. Malnutrition

It is widely accepted that adequate nutrition plays an important role in maintaining optimal health (BAPEN 1994).

Undernutrition is the consequence of a nutritional intake that does not meet nutritional needs as a result of one or more of the following:-

- Decreased dietary intake.
- Increased nutritional requirements.
- Impaired ability to absorb or utilise nutrients.

The effects of undernutrition if untreated are not limited to structural changes, such as loss of body tissue but can result in widespread physiological and functional effects as the body tries to adapt to the conditions of starvation and nutritional deficiencies. These effects may include:-

- Impaired immune function.
- Delayed wound healing.
- Increased risk of tissue breakdown.
- Muscle wasting and weakness which can affect:-
 - Respiratory function.
 - Cardiac function.
 - Mobility.
- Altered structure of the small intestine which can result in malabsorption.
- Increased risk of post operative complications.
- Apathy and depression.
- General sense of weakness and illness.



In summary, under-nutrition can lead to considerable increases in:-

- Morbidity.
- Mortality.
- Costs associated with recovery.

2.2. Enteral Tube Feeding

When the gut is functional and accessible, the enteral route of support is the preferred choice. If oral dietary intake remains compromised or is contraindicated for more than 5-7 days, artificial nutritional support in the form of enteral tube feeding may be necessary. Examples of such situations are :-

- **Hypermetabolism.** Major surgery, sepsis, trauma, burns, organ transplantation, HIV/AIDS.
- **Neurological disease.** Stroke, motor neurone disease, multiple sclerosis, head injury, demyelinating disease.
- **Gastrointestinal disease.** Oesophageal obstruction, inflammatory bowel disease, short bowel syndrome, pancreatic insufficiency (eg cystic fibrosis), gastrectomy.
- **Cancer.** Chemo or radiotherapy, surgery.
- **Psychiatric disease.** Anorexia nervosa, severe depression.
- **Organ system failure.** Respiratory failure, renal failure, cardiac failure, hepatic failure.
- **Learning disability.** Cerebral palsy, Rett syndrome.

Enteral tube feeding may need to be instigated earlier if the patient is already malnourished.

2.2.1. Neurological Disease

Swallowing problems are often associated with neurological impairment, affecting up to 50% of patients admitted to hospital with acute stroke, as well



as patients with Parkinson's Disease, Multiple Sclerosis, Motor Neurone Disease and patients who have suffered serious brain injury. Swallowing problems can put patients at risk of aspiration, pneumonia, dehydration and malnutrition. Assessment of the patient's ability to swallow safely may include videofluoroscopy, bedside testing and fibre-optic endoscopic evaluation of swallowing [FEES]. The role of the dietitian and speech and language therapist is pivotal to decision making.

The Scottish Intercollegiate Guidelines Network, 1997, have made the following recommendations in relation to the management of swallowing problems following acute stroke:-

- All such patients should have their swallow assessed as soon as possible by appropriately trained personnel, using a simple validated bedside testing protocol (not the gag reflex).
- Any patient with an abnormal swallow should be seen by a speech and language therapist who should assess further and advise the patient and staff on safe swallow and consistency of diet and fluids.
- Such patients should be screened by appropriately trained personnel, using a valid nutritional screening tool, as soon as possible after admission.
- Individual units should have local guidelines on, a) how to screen for swallow impairment, b) the use of videofluoroscopy and if available, FEES and c) the use of enteral feeding (NG/PEG) in swallow impaired patients.
- Decisions regarding the appropriateness of enteral feeding may be particularly difficult and/or contentious. Such decisions should take account of the views of the patient (if appropriate), their relatives/carer and all the members of the multidisciplinary team.

The ethical and legal aspects of nutritional support must be taken into account (see Section 3).



2.2.2. Dementia

Patients with advanced dementia frequently develop eating difficulties and weight loss. Healthcare professionals and the public do not always view advanced dementia as a terminal illness and it is easy to lose sight of the fact that 'not eating' may be a facet of the dying process and not the cause.

Recent reviews of the literature have shown that the use of feeding tubes in advanced dementia are generally ineffective in prolonging life, preventing aspiration and can have adverse consequences, principally the need for pharmacological or physical restraint (Gillick, 2000).

With this group of patients:-

- Reasonable alternatives to tube feeding should be explored e.g. altering flavours, amounts, consistency and availability of food.
- Carers should be educated with regard to these alternatives.
- Increased assistance with eating should be provided when necessary.
- The practice of tube feeding should be carefully considered.

2.3. Home Enteral Tube Feeding (HETF)

Enteral tube feeding is usually commenced in hospital and may often be required to continue in the community. In many situations the decision to use home enteral tube feeding is straightforward. It provides patients with adequate nutrition and allows them to return to a familiar environment where relationships with family and friends can be resumed. It can give a degree of independence and some patients may even be able to return to work or education.

In other situations, for example, where the patient is elderly or suffering from terminal illness, the rationale for home enteral tube feeding should be weighed against the patient's quality of life. In these cases the decision should be made as soon as possible involving the patient, carer and all members of the multidisciplinary team, (clinician, dietitian, nurse, social worker and speech and language therapist).



References:

Elia, M., Cottee, S., Holden, C et al. Enteral and Parenteral Nutrition in the Community. Report by BAPEN working party. London: BAPEN, (1994).

Gillick, M.R., (2000). Rethinking the Role of Tube Feeding in Patients with Advanced Dementia. *New England Journal of Medicine*, 342, (3) 20 January, 206-210.

Scottish Intercollegiate Guidelines Network, (November 1997). Management of Patients with Stroke III Identification and Management of Dysphagia.



SECTION 3

LEGAL AND ETHICAL ASPECTS OF NUTRITIONAL SUPPORT

3.1. Tube feeding permits maintenance of tissue metabolism and structure even though a patient cannot eat anything, or enough to regain health. Tube feeding is a medical treatment for which permission is required from competent patients. Adequate consultation is needed when such treatments are started, stopped or continued in the long-term for incompetent patients. It is likely that patients and their relatives will increasingly expect good nutritional care as part of medical treatment. It is also likely that the public will increasingly accept that hydration or nutrition via a tube should not be used when it impairs the dignity and comfort of those who are dying, or prolongs the life of anyone who has permanently lost the attributes of a person due to severe or irreversible brain injury or disorder.

The most frequent ethical debate concerned with a patient's nutrition relates to the prolongation of life, particularly of those with a severe neurological deficit and those in the terminal stages of illness. A professional carer has a duty to prolong life but not to inappropriately prolong dying.

In the report of British Association for Parenteral and Enteral Nutrition 'Ethical and Legal Aspects of Clinical Hydration and Nutritional Support', it recommends that healthcare professionals have an ethical duty to recognise and treat malnutrition, usually by attention to drinking and eating as part of optimal care for patients. Only in certain circumstances when such care prolongs the period of dying or maintains an unacceptable quality of life should positive nutritional treatment to provide a normal intake be reconsidered and possibly withdrawn.

In ethical terms there is no distinction between withholding or withdrawing a treatment; in emotional terms it is more difficult to withdraw a treatment once begun than not to start it. For this reason there can sometimes be a reluctance to commence tube feeding for fear it will be difficult to stop. In such circumstances it may be appropriate to start treatment for a time limited period with the provision that the outcome will be reviewed at the end of a specified period of time or earlier if need be and stopped, changed or continued as appropriate. Ethical problems at this stage can usually be pre-empted if they have been discussed with the patient (if possible), the family and the healthcare team from the outset.



The sanctity of human life is a strongly held belief in many religions. When religious belief conflicts with medical opinion, legal judgements have ruled that personal conviction cannot over-ride public policy. Competent adults have the legal right to refuse treatment and their decisions should not be overridden by healthcare professionals. However it is important that the patient is deemed competent. Some patients do not wish to exercise their right of choice and prefer to leave the decisions to those who care for them, this usually implies acceptance of treatment recommended. For an incompetent adult the final arbiter of whether treatment is given is the treating doctor, who must make a decision in the patient's best interest. In difficult clinical situations it is recommended that a second opinion should be sought from another senior clinician or a clinical ethics committee.

The Council of the British Association for Parenteral and Enteral Nutrition issued a report in 1998, entitled "Giving or withholding fluid and nutrients".

The Summary and Recommendations are as follows:-

1. A patient who can swallow and expresses a desire or willingness to drink or eat, should be encouraged and assisted to do so and provided with appropriate fluid and nutrients as part of basic care.
2. Carers concerned with nutrition should work together as a team; each discipline contributes a different skill and each carer has a view on ethical issues.
3. A treatment plan regarding fluid and/or nutrient provision should be made for any patient with an existing or probable future fluid or nutrient deficit.
4. If the plan is to maintain an adequate intake, appropriate measures should be taken, with the patient's consent, to achieve this.
5. If the plan is to provide compassionate care for relief of symptoms during the terminal phase of illness, oral fluid and food should be given according to the patient's wishes and ability to swallow; fluid given through a tube should only be given if it is needed to relieve thirst.
6. Fluid given via a tube is regarded in law as a medical treatment. Some professionals regard tube feeding, especially in infants, to be part of basic medical care.
7. Consent of a competent adult patient must be sought for any treatment, especially an invasive measure such as hydration or feeding through a tube and a refusal is binding. Competence depends on adequate thought processes to make the decision needed. It is ethically and legally wrong for a carer to underestimate the capacity of a patient in order to achieve what the carer believes to be in the patient's best interest.



8. For an incompetent adult patient, the doctor undertaking care is responsible in law for any decision to withhold, give or withdraw a medical treatment. Any previously expressed views about the type of treatment the patient would wish to receive, especially if there is written corroborative evidence, carry weight. Full consultation with the family and the health care team is needed from the outset, but under present English law, relatives or a nominated proxy cannot make a decision on behalf of an adult patient.
9. Special considerations apply regarding the responsibility of parents to make a decision on behalf of their child and consent for treatment of adolescents.
10. Application to the court should be made regarding the legality of withdrawing a tube feed from a patient in a vegetative state.
11. Under carefully specified circumstances, it can be legal to enforce a tube feed for an unwilling patient with mental disorder, including anorexia nervosa.
12. When tube feeding is continued after leaving hospital there is a duty to ensure that the patient, daily carers and the community health team are adequately instructed in the technique and possible complications.

3.2. Persistent Vegetative State

The diagnosis of persistent vegetative state is not easy and must be made formally (using recognised diagnostic criteria) before it can be used as a basis for other decisions. Feeding is a medical treatment. Consent for any medical treatment **cannot** be given by a relative but requires either the consent of the patient or a judgement that such treatment is in the patient's best interest. The latter may be referred for legal consideration.

Patients in the vegetative state are unable to give consent, both literally and legally (in terms of their mental capacity). Therefore they can only be treated if it is in their best interests. That question can be referred to the High Court. The question is not whether it is in the best interests of the patient that he/she should die. The question is whether it is in the best interests of the patient that his/her life should be prolonged by the continuance of this form of medical treatment or care. In every case the High Court has decided that a patient in the permanent vegetative state does not benefit from continued treatment. It does not decree that the treatment must stop.



References:

British Association for Parenteral and Enteral Feeding. Ethical and Legal Aspects of Clinical Hydration and Nutritional Support. (ISBN 1-899467-25-4).

British Medical Association, (1999). Withholding and Withdrawing Life Prolonging Medical Treatment. Guidance for Decision Making.

Journal of the Royal College of Physicians of London, (1999). 33, No. 1 Jan/Feb, 39-45. *Giving or Withholding Fluid and Nutrients, Ethical and Legal Aspects.*

SECTION 4

ROUTES OF ACCESS FOR ADMINISTRATION OF ENTERAL NUTRITION

4.1. Aim

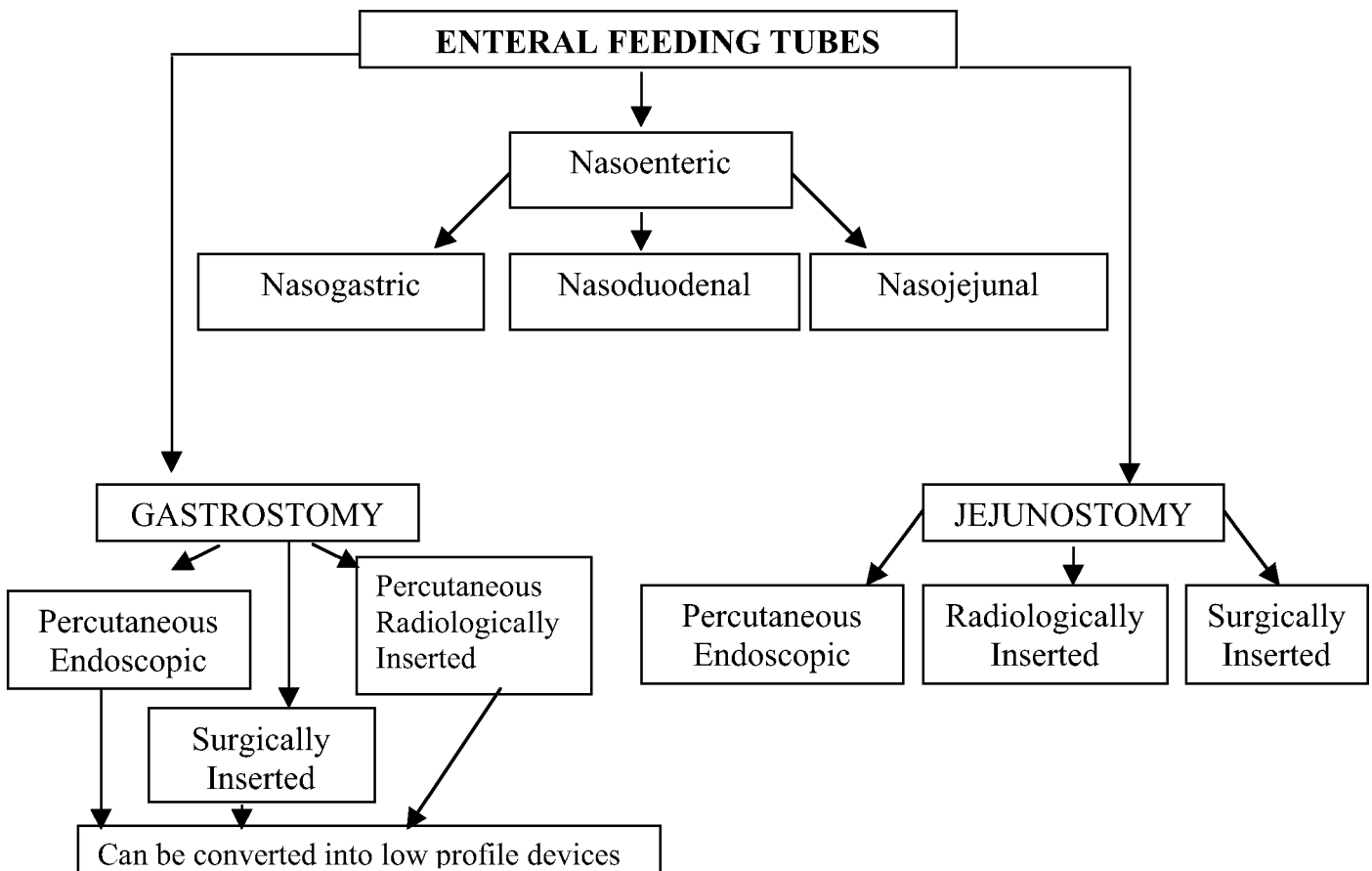
The aim of this section is to ensure that, once the decision to feed enterally has been made, the route of access chosen is:-

- Appropriate with regard to clinical condition.
- Safe and comfortable for the patient.
- Secure.

4.2. Access Routes Available

The three main routes of access are:-

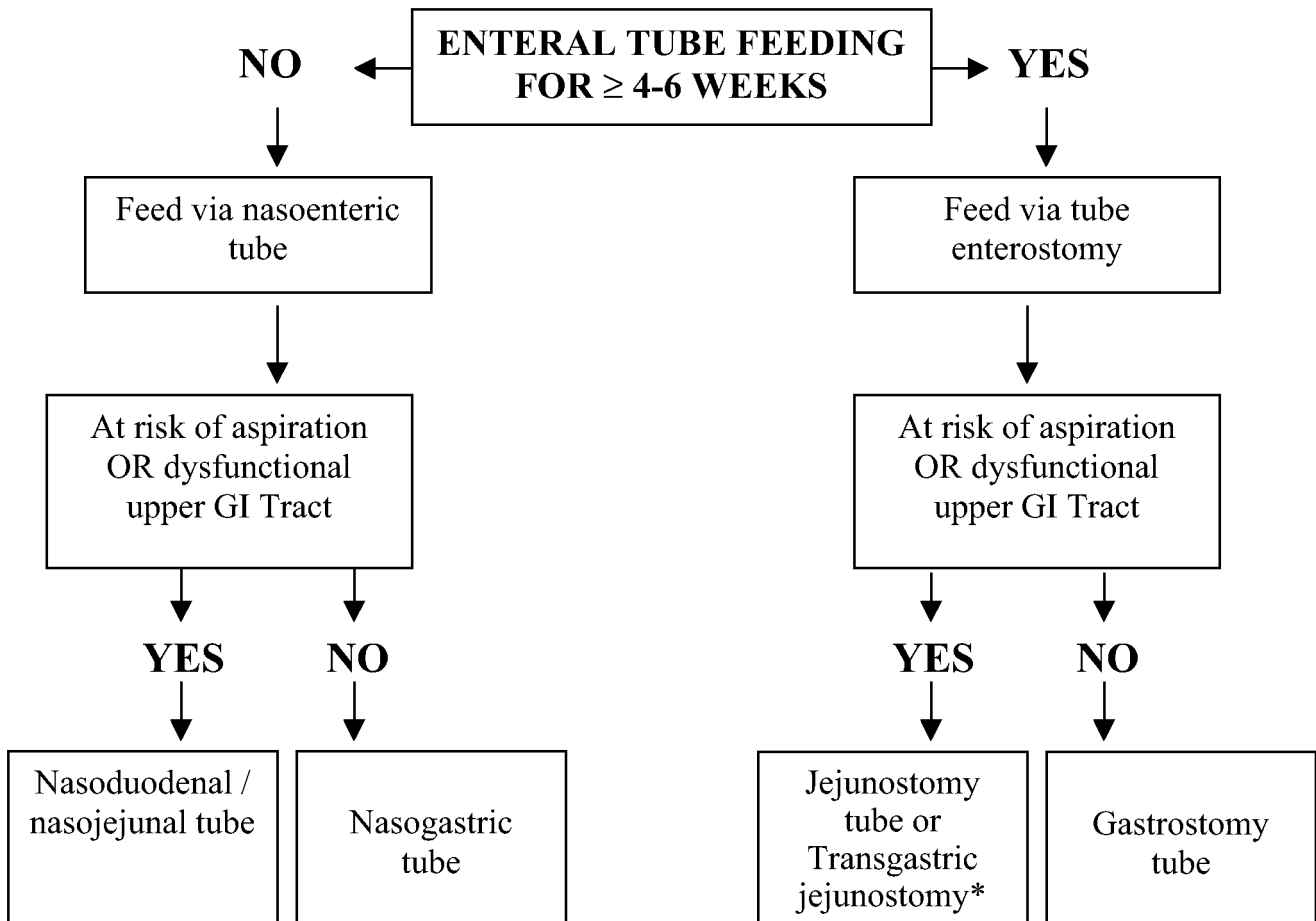
- Nasoenteric.
- Gastrostomy.
- Jejunostomy.



4.3. Selecting Route of Administration

The route selected predominately depends upon:-

- The anticipated duration of feeding.
- The functional status of the GI tract.
- The potential for aspiration.



**It may be difficult to maintain the tip of the transgastric jejunostomy in the jejunum as it can potentially reflux back into the stomach. If this problem becomes persistent and ongoing, it might be beneficial to convert the tube to a surgically inserted jejunostomy tube.*

There are always exceptions to these guidelines and other factors which should be considered in making the decision to feed must also be considered when choosing the route of access, for example :-

- Availability of local technical expertise.
- Potential complications of tube insertion.
- The patient's prognosis.
- The patient's general medical condition.



4.4. Nasoenteric Feeding Tubes

Description

A nasoenteric feeding tube refers to any feeding tube that is placed nasally into the oesophagus and beyond. They should be referenced by the location of the tip.

For example:

Tip in stomach	- Nasogastric tube
Tip in duodenum	- Nasoduodenal tube
Tip in jejunum	- Nasojejunal tube

Indications

- When feeding is likely to be necessary for ≤ 6 weeks.
- When access via other routes is inappropriate or unachievable at the time.

Contraindications

- Long term feeding, that is $\geq 4-6$ weeks.
- Oesophageal strictures.
- Fistulae eg oesophageal perforation.
- Nasal fractures and bleeds.
- Basal skull fractures.

NOTE: *Oesophageal varices, whilst not a contraindication to nasogastric feeding, requires caution with tube insertion. It would be advisable to seek expert help with such patients.*



GUIDANCE ON ACHIEVING ACCESS

4.4.1. Which nasoenteric tube to use

Situation	Tube	Rationale
Patient requires tube feeding for ≤ 4 - 6 weeks	Choose nasoenteric tube	Less invasive, most cost effective and safest method of delivery of enteral feed
Gastrointestinal tract is functional and patient is not at risk of aspiration	Choose nasogastric tube	Easiest nasoenteric tube to place and maintain position
Gastrointestinal tract is dysfunctional and/or patient at risk of aspiration	Choose nasojejunal tube	Less invasive, most cost effective, safest small bowel access
Nasoduodenal/ nasojejunal access required	Choose tube > 109 cms long	To enable tip to reach correct position
Nasogastric tube for enteral tube feeding alone and not gastric aspiration	Choose polyurethane/ silicone tube in 8-12 French gauge	PVC tubes >12 French gauge eg. Ryles or Levin tubes can result in rhinitis, pharyngitis, oesophagitis, oesophageal strictures and gastritis. This reduces patient comfort, ability to eat and therefore likelihood of compliance. Both drugs and high fibre feeds can be administered via 8 French gauge and above



4.4.2. Insertion of nasoenteric tube

Situation	Action	Rationale
Consent	Informed consent for insertion should be obtained from the patient/carer by a person able to carry out the procedure.	To facilitate informed patient and/or carer choice
Nasogastric tube insertion	Insert the tube as per local protocol and national guidelines. This should be done by a trained member of staff (see Appendix 2) Burnham, P. 2000	To minimise potential complications, e.g. Pulmonary aspiration Naso pharyngeal haemorrhage Pulmonary haemorrhage Pneumothorax Oesophageal perforations
Nasojejunal tube insertion	Achieve nasoduodenal/nasojejunal placement by:- <ul style="list-style-type: none"> Nasogastric placement accompanied by an intravenous prokinetic agent Kalliafas, S et al. 1996 Endoscopic or fluoroscopic method 	<ul style="list-style-type: none"> 75% successful. Useful if equipment and technical expertise unavailable for more reliable methods of placement. Also inexpensive 98% reliable. Reserved for those patients on whom bedside techniques fail
Fixation	Anchor the tube securely to the cheek keeping it out of the patient's visual fields and avoiding friction to the nose	Reduces the risk of displacement/dislodgement
Documentation	Measure and record the length of tubing remaining from nostril to tip	Gives baseline against which to assess possible tube displacement

4.4.3. Checking position of nasoenteric tube

Situation	Action	Rationale
<p>Methods of checking position of NG tube</p>	<p>Keep guidewire in situ and check position of the tip of the feeding tube as per local policy:-</p> <ul style="list-style-type: none"> • Testing of aspirated gastric contents with pH sensitive paper strips can confirm position <ul style="list-style-type: none"> - pH < 4 = gastric position - pH > 6 = bronchial or small bowel position (yellow/green aspirate) <p>The pH sensitive strip method of confirming position should only be carried out by trained and experienced members of staff</p> <p>Chest/abdominal x- ray to confirm position Metheny, N et al. (1990) Newman, MJ et al. (1995) Metheny, N et al. (1995)</p>	<p>Reduces risk of intrapulmonary administration of feed which can be fatal</p> <ul style="list-style-type: none"> • 86% reliable • X-ray not required if pH < 4 and external length of tubing is unchanged • More likely to have false positive than negative results <p>Factors unrelated to the position of the tube can elevate pH:-</p> <ul style="list-style-type: none"> • H₂ antagonists • Proton pump inhibitors • Antacids. <ul style="list-style-type: none"> • Gold standard • 99% reliable
<p>Checking position of nasoduodenal or nasojejunal tube</p>	<ul style="list-style-type: none"> • Visual confirmation at time of fluoroscopic placement of nasoduodenal/nasojejunal tubes is usually sufficient • However, position should generally be confirmed by x-ray 8-12 hours after placement Metheny, N et al (1994) 	<ul style="list-style-type: none"> • Reduces unnecessary time and expense of employing other position confirmation techniques at this stage • NJ tubes can be displaced during withdrawal of endoscope • Auscultation and pH aspiration techniques can be inconclusive
<p>Removing guidewire</p>	<p>Once position confirmed, remove guidewire</p>	<p>To improve patient comfort as guidewire makes tube rigid and uncomfortable</p>



Situation	Action	Rationale
Re-use of guidewire	Retain guidewire. If re-using follow manufacturer's instructions for reinsertion of guidewire into feeding tube NOTE: <i>Guidewire is not to be reinserted when tube is in situ</i>	Nasoenteric feeding tubes that are for single patient use can be reinserted using retained guidewire if placement is unsuccessful or the tube is accidentally displaced NOTE: <i>If device is labelled for single use only the tube should be discarded and a new tube inserted</i>

4.4.4. Documentation

Information	Action	Rationale
Consent	Ensure consent is obtained and documented in medical notes DHSSPS (2003)	To provide a legal record of consent
Tube details	Document make of tube, French gauge and batch number in medical notes	French gauge will determine which enteral formulae can be used Batch number will ensure traceability
Date	Document date of tube insertion	To help determine when tube needs to be replaced
External tubing	Document length of tubing visible	To help determine if tube has been displaced



4.5. Gastrostomy Feeding Tubes

Description

A gastrostomy feeding tube is one which has been inserted directly through the abdominal wall into the stomach. The tube is secured by a soft spongy balloon or bumper on the inside and a firm plastic/polyurethane fixation device on the outside. Most are inserted by the percutaneous endoscopic technique (PEG) and the pull technique is favoured. They can also be inserted surgically or under radiological guidance.

Indication

- When feeding is likely to be necessary for $\geq 4 - 6$ weeks.

Contraindications

Absolute

- Mechanical obstruction of the GI tract (pyloris and more distal).
- Imminent death.
- Uncorrected coagulopathy.
- Ascites.

Relative

- Previous gastric surgery.
- Morbid obesity.
- Gastro-oesophageal reflux with risk of aspiration.
- Enteric fistulae.
- Liver disease.
- Portal hypertension.
- Crohn's disease.
- Severe diarrhoea.
- Protracted vomiting.
- Intestinal dysmotility.

NOTE: *The list is not exhaustive and particular individual circumstances may prevent or preclude successful tube placement.*



GUIDANCE ON ACHIEVING ACCESS

4.5.1. Which gastrostomy tube placement technique to use

Situation	Tube	Rationale
Long-term feeding ($\geq 4-6$ weeks)	PEG	Most secure route for long term feeding. Obviates need for pulmonary intubation tests
Oesophageal obstruction	<ul style="list-style-type: none"> • Radiologically inserted gastrostomy • Surgical gastrostomy 	<p>Access to the stomach without resorting to anaesthesia and surgery</p> <p>Convenient at laparotomy. Alternative to radiological insertion</p>



4.5.2. Insertion of percutaneous endoscopic gastrostomy tube – aspects of technique

Situation	Action	Rationale
Consent	Informed consent should be obtained from the patient/carer by a person able to carry out the procedure	To facilitate informed patient and/or carer choice
Coagulopathies	Coagulopathies (including therapeutic anticoagulation) should be corrected preoperatively	To prevent bleeding complications
Prophylactic antibiotics	The patient should be assessed for risk of infection prior to insertion of gastrostomy tube in relation to antibiotic prophylaxis British Society of Gastroenterology (1996)	Evidence would suggest that prophylactic antibiotics may reduce peristomal infection
Sedation	Sedation should be used cautiously as patients are often elderly or frail	To prevent respiratory depression and hypoxia
Monitoring	Vital functions (and specifically SAO ₂) should be monitored throughout the procedure	Early detection of cardiorespiratory complications
Aspiration	Nasopharyngeal suction must be available as the procedure is usually done with patient supine	Patients having PEG placement are at particular risk of aspiration
PEG placement	Follow manufacturer's recommendations	Technique can vary between different products
Locating the stomach	Transillumination of the abdominal wall is recommended. Optimum site is identified by indentation/transillumination	Prevents injury due to interposition of bowel
Fixation	The fixation device should be flush with but not tight to the skin. Sutures are not normally required	To prevent leakage from stomach and avoid pressure necrosis



4.5.3. Documentation

As per nasoenteric tube Section 4.4.4.

4.5.4. Complications of gastrostomy insertion

EARLY (< 30 days)

- Bowel perforation.
- Haemorrhage.
- Peritonitis.
- Aspiration.

LATE (> 30 days)

- Diarrhoea.
- Alterations in drug absorption and metabolism.
- Various metabolic disturbances.
- Site infection.
- Granulation tissue.
- Peristomal leakage.
- Tube blockage.
- Tube dislodgement.
- Tube migration.
- Mortality with percutaneous endoscopic gastrostomy tubes.

A PEG can be sited successfully in 97% of cases. Procedure related mortality is approximately 0.5%. The 30-day mortality is 4-26% depending upon case selection and is usually the result of underlying disease. The risk of severe complications is 1-5% and mild complications 8-30%.

4.6. Low Profile Gastrostomy Devices

Description

Low profile gastrostomy devices (LPGDs) are alternatives to the traditional gastrostomy tube. These devices sit flush at skin level and no tubing extends outside the patient's abdomen.

There are two types of LPGDs: obturated and non-obturated. All have anti-reflux valves designed to prevent backflow of stomach contents through the top of the tube.



The **obtured** device has a one-way valve that prevents gastric reflux and a mushroom shaped dome with holes acts as an internal anchoring device. The device has an external skin disk with a flap and plug for closing the abdominal opening. The dome is stretched for placement in the stomach by using a special introducer called an obturator. Because the dome tip remains larger than the stoma judicious pressure is required to place the tube therefore the gastrostomy tract must be well healed, at least 3 months from time of initial PEG tube placement before the devices can be placed (Townsend, 1991).

The **non-obtured** device has an external skin disk and an internal balloon anchoring device with a flow through tip that allows feed to flow into the stomach. There is an anti-reflux valve. It does not require judicious pressure for insertion and is stabilised by a balloon that is inflated with sterile water. It may be used with a mature tract after a minimum of 3 weeks.

Advantages of LPGDs

- Aesthetically pleasing.
- Does not interfere with activities of daily living, therefore ideal for the younger, more ambulant patient.
- Durable, usually lasts longer than traditional replacement gastrostomy tubes.
- Decreased migration.
- Self extubation is more difficult than with standard gastrostomy tubes.

Disadvantages of LPGDs

- Obtured device.
 - Risk of tract disruption.
 - May be discomfort with placement or removal.
- Non-obtured device.
 - Possible early rupture of balloon.

NOTE: *Both types of LPGDs are more expensive than traditional gastrostomy tubes.*

Indications

- Patients with a tendency to pull out their gastrostomy tube, for example, confused patients.
- Patients who require a more discreet and less obtrusive device for cosmetic reasons.
- Where frequent gastrostomy tube changes are to be avoided.



Contraindications

- Patients who have continually high intragastric pressure secondary to disease processes. Gastric contents may leak through the LPGD shaft.
- Patients with an acutely angled gastrostomy tract as the LPGD cannot be placed properly.
- Patients who require jejunal feeding.
- Patients who require frequent decompression.
- Patients with a gastrostomy tract of < 3 weeks old for a non-obtured device.
- Patients with a gastrostomy tract of < 3 months old for an obtured device.
- Patients with poor dexterity and lack of family/clinical support.

4.6.1. Insertion of LPGD

Situation	Action	Rationale
Obtain consent	Informed consent should be obtained from the patient/ carer by a person able to carry out the procedure. Discuss indications, alternatives and risks of insertion of LPGD with patient and/or carer. Proceed with their agreement	To facilitate informed patient and/or carer choice
LPGD placement required: • Patient can cope with discomfort and/or doctor available	Follow manufacturer's recommendations for insertion Choose obtured device. Insertion should be by an appropriately trained member of staff or under supervision of doctor	Insertion technique varies between devices Obtured device is more durable but has an increased risk of tract disruption and therefore requires insertion by appropriately trained doctor



Situation	Action	Rationale
<ul style="list-style-type: none"> • Patient may not cope with discomfort of insertion and/or doctor not available 	<p>Choose non-obtured device. Doctor not required for insertion but personnel must be trained and competent Insertion technique varies between devices</p>	<p>Balloon device is less durable but there is less risk of tract disruption during the insertion procedure. Less discomfort with insertion</p>
<p>Choice of LPGD length</p>	<p>Follow manufacturer's instructions. The device should not be:</p> <ul style="list-style-type: none"> - too tight to the skin - too loose within the tract 	<p>To avoid discomfort and/or pressure necrosis A loose device will cause unnecessary leakage</p>
<p>Confirmation of LPGD position</p>	<p>Arrange contrast X-ray on LPGD to ensure correct placement into the stomach</p>	<p>There is a slightly increased risk of tract disruption with the LPGD insertion</p>
<p>Documentation</p>	<p>Document make of LPGD, French gauge, batch number, length of shaft and date of insertion in medical notes</p>	<p>French gauge will determine which enteral formulae can be used Batch number facilitates traceability Make, French gauge and shaft length will facilitate replacement</p>

4.7. Jejunostomy Feeding Tubes

Description:

A jejunostomy feeding tube is one which is inserted into the proximal jejunum primarily to administer nutrition over a prolonged period of time \geq 6 weeks. It creates a tract between the jejunum and abdominal surface. There are several methods of accessing the jejunum for feeding:-

- Open Jejunostomy - Placed at laparotomy under general anaesthetic.
Techniques used being Witzel Tunnel, needle catheter or Roux-en-Y.



- Percutaneous Endoscopic - Gastrostomy with jejunal extension
Involves conversion of a gastrostomy into a jejunostomy by guiding an extension tube through the existing gastrostomy tube via the pyloric sphincter muscle and into the jejunum. Can be done endoscopically or by radiological guidance.
- Fluoroscopic Jejunostomy - (transgastric jejunostomy tube)
Involves radiological access to the jejunum which is achieved directly or transgastrically.
 - Directly using a 21 gauge needle to puncture the jejunum which has been distended with air passed through a nasogastric tube. A guidewire then replaces the needle and is exchanged for larger guidewires to dilate the tract for the feeding tube.
 - Transgastrically by placing a jejunal catheter into a previous or newly created gastrostomy site and under fluoroscopy manipulating the tube into the jejunum with a guidewire.

NOTE: *Double lumen tubes can be inserted by all three methods and facilitate decompression of the stomach and feeding access to the jejunum simultaneously.*

Indications

- Gastric stasis.
- Severe gastro-oesophageal reflux disease.
- Proximal small bowel fistulae where tube is placed distal to the fistula.
- Obstruction of the upper gastrointestinal tract where tube is placed distal to the obstruction.
- Surgery involving the upper gastrointestinal tract e.g. gastrectomy, oesophagectomy, or pancreatectomy.



Contraindications

Absolute

- Distal gastrointestinal tract obstruction.
- High output small bowel/large bowel fistula.
- Imminent death.
- Uncorrected coagulopathy.
- Ascites.

Relative

- Previous small bowel surgery.
- Crohn's Disease - if segment of bowel to be used is diseased.
- Severe diarrhoea.
- Intestinal dysmotility.

NOTE: *All patients' circumstances should be considered individually as above list is not definitive.*

GUIDANCE ON ACHIEVING JEJUNAL ACCESS

4.7.1. Which method of jejunal access to use

Situation	Tube	Rationale
Patient has had upper gastro-intestinal tract surgery e.g.gastrectomy or oesophagectomy	Choose open jejunostomy	Planned at time of surgery under general anaesthetic Small intestine motility returns more quickly than that of stomach and large bowel post-op
Patient has prolonged gastric aspirates / vomiting of > 500 mls daily which may be due to gastric stasis post op	Choose percutaneous endoscopic gastrostomy with jejunal extension (PEJ)	Inserted under local anaesthetic therefore reduced risk to patient and reduced expense as no general anaesthetic / surgery required Can be reverted to PEG when problem resolves
Patient continues to have large volumes of vomit or gastric aspirate despite jejunostomy feeding	Choose double lumen transgastric jejunostomy (inserted endoscopically or fluoroscopically)	One lumen in stomach to remove gastric residual volume One lumen in jejunum to facilitate feeding
Patient has cancer / benign obstruction of the upper GI tract with no immediate plan for surgery	Choose fluoroscopic jejunostomy	Unlikely to get endoscope past obstruction but may get NG tube passed to facilitate fluoroscopic insertion Less risk to patient than open jejunostomy Less expensive than surgery and general anaesthetic In addition if tumour is malignant, endoscopic procedure increases risk of transfer of tumour cells to stoma site
Patient with obstruction of upper GI tract with inability to pass an NG tube or endoscope into the stomach	Choose open jejunostomy	Unable to inflate stomach with air via NG tube for fluoroscopic access Unable to get endoscope past obstruction Only option



4.7.2. Insertion of jejunostomy tubes

Situation	Tube	Rationale
Consent	Informed consent for insertion should be obtained from the patient/carer by a person able to carry out the procedure	To facilitate informed patient choice
Insertion	Insert tube as per local protocols and manufacturer's guidelines. Tubes should be inserted by trained and experienced personnel	To minimise potential complications eg. small bowel perforation
Fixation	Anchor tube securely to skin as per local policy which will depend on tube and method of insertion. NB Horizontal tube/drain attachment devices can be used if no wound or tube nearby	Reduce risk of displacement / dislodgement
Detecting tube displacement	Measure and record the length of tubing visible from skin surface to end	Gives baseline against which to assess possible tube displacement
Checking position	Check tip of tube visually, radiologically or endoscopically at time of insertion depending on method of insertion	To ensure safe delivery of feed into jejunum and no further risk of complication aspiration, pneumonia, anastomotic leak of feed post upper GI surgery etc. To reduce expense associated with unnecessary jejunogram

4.7.3. Documentation:

- As per nasoenteric tubes Section 4.4.4.



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SECTION 5

MANAGEMENT OF THE PATIENT, ENTERAL FEEDING TUBE AND ADMINISTRATION SYSTEM

Introduction

Once the enteral feeding tube has been inserted there are a number of processes and interventions which must occur. These include establishing the feeding regimen, routine care of the feeding tube, access site, feeding system and administration pump.

The underlying objective must be to ensure safe administration of the enteral feed to the patient and management of both the effects and the potential side effects of enteral tube feeding. All health care professionals should give due consideration to individual patient needs and the care environment, both in hospital and in the community.

5.1. Management of Patient

- Nutritional Status.

Before feeding can be commenced or a feeding regimen established, the patient must have an assessment of nutritional status so that the feed prescribed meets the patient's nutritional requirements. This will also provide the baseline information needed to assess the outcome of nutritional support.

- Psychosocial Needs.

The wishes and needs of the patient are paramount and so the patient should be fully informed at an appropriate level of understanding.

The relatives/carers must be involved in the care of the patient and the administration of the feed from the outset, in order to accommodate a smooth transition from hospital to community. Consideration must also be given to discharge planning as early as possible with involvement of all key workers when necessary.



- Risk of Infection.

Before feeding is commenced it is important to assess the patient's risk of infection, as this will influence the nursing management of both the feed and the feeding tube. It is vital to assess both the patient and the care environment so that the administration of the feed can be managed accordingly (see Risk Assessment, Appendix 3).

- Oral Health.

Mouth care is an integral part of general care. When enteral tube feeding is started, a dentist should assess the patient's oral health, so that dental treatment can be planned and a programme for oral hygiene established. Patients and carers should be educated regarding oral hygiene practices. These can be supported by other members of the dental team e.g. dental hygienist or dental therapist. This is essential when the patient has natural teeth, to prevent plaque and calculus (tartar) building up, in the increasingly stagnant oral environment and causing gum disease.

Treatment of advanced gum disease presents challenges for the dentist; particularly when working in a sub-optimal environment, e.g. a hospital ward, residential/nursing home, or in the patient's own home. When sedation, or general anaesthesia is required to achieve gross calculus removal, the procedure may be of such high risk that it is contra-indicated. Good oral hygiene procedures established at the start of enteral feeding, will prevent the need for high-risk treatment later.

Even if the patient has no natural teeth remaining, a dentist should be asked to assess the patient's oral health and advise on appropriate mouth care. Such care may include daily cleaning of the soft tissues of the mouth and any dentures.

Continued regular dental assessments, at intervals advised by the dentist, are essential to match oral hygiene practices to changing patient circumstances and to ensure optimal oral health (see Appendix 4).



5.1.1. Potential problems in managing the patient

Potential Problem	Action to Be Taken	Rationale
Unavailable weight	Subjective Global Assessment or other objective methods of assessment e.g. mid-arm muscle circumference or dynamometry can be used Schofield et al. (1985)	It is essential to have baseline information to assess the outcome of nutritional support
Unavailable height	If accurate height not available, recall height from patient/carer and record this as an estimated height Demi-span may be used as a method of calculating height in older patients Kwok, T., & Whitelaw MN. (1991)	There is height loss with age therefore measuring or recalling height may not be accurate
The patient remains in hospital for an inappropriate period of time due to problems within the discharge process	All relatives/carers and key workers must be involved in the decision-making process that commences prior to the insertion of the feeding tube (see Section 3) It is essential that the key workers are involved in the co-ordination of the discharge planning process as early as possible All relevant personnel must also be involved in the management of the feeding tube and the administration system and allowed to become aware of their responsibilities towards the patient post-discharge (see Section 6.2.4.) It may be necessary for the social worker or care manager to co-ordinate the discharge and all the support systems that might be required by the patient in the community. The aim of all personnel is to ensure a smooth transition from hospital to community	The aim of all personnel is to ensure a smooth transition from hospital to community It is essential for the safe administration of the feed to the patient that, not only the patient but all key workers fully understand their responsibilities to the patient post-discharge



5.2. Management of Hygiene Issues

5.2.1. Hand hygiene

- Hand hygiene is the single most important procedure in the prevention and control of infection.
- The hands of the health care worker, carer and/or patient should be thoroughly washed under warm running water using liquid soap, rinsed and dried thoroughly, preferably with paper towels, before: -
 - Preparing feeds.
 - Assembling systems.
 - Any subsequent manipulation of the system.

5.2.2. Protective clothing

- Wash hands before donning gloves and after removal.
- Don a new pair of disposable non-sterile gloves each time the enteral feeding system is handled. (Note: *Take care when removing gloves from the box that only the gloves to be used are touched*).
- A clean disposable plastic apron should be worn.
Carers caring for relatives in their own home do not require protective clothing unless the patient has an increased risk of susceptibility to infection (see Risk Assessment, Appendix 3).

5.2.3. Potential problems with susceptibility to infection

Potential Problem	Action to Be Taken	Rationale
Persistent oral infections	Maintain high standard of oral hygiene (see Appendix 4) Refer patient to dentist for treatment and/or advice Seek specialist dental advice where appropriate	Common oral infections e.g.candida should be eliminated to prevent any delay to the reintroduction of oral intake. Mucosal tissues should look hydrated so there is no delay to the rehabilitation of the patient



Potential Problem	Action to Be Taken	Rationale
<p>Recurrent infections</p>	<p>The patient should be carefully assessed for risk of susceptibility to infection</p> <p>The appropriate precautions should be taken in relation to management of the feeding tube and feeding system</p> <p>Seek further advice from local Infection Control Team if ongoing problems persist</p>	<p>It is the responsibility of all carers involved in the management of the patient to ensure that the risk of infection is minimised</p>

5.3. Management of Feeding Tubes

5.3.1. Nasoenteric tubes

- Check the length of tube from nose to end of tube at least daily to ensure tube has not been accidentally displaced.
- Check the fixation tape/device and change at least daily to prevent displacement of the tube.
- Confirm correct position of tube before feeding commences (see Section 4.4.3.).
- Replace long term fine bore tubes every 4-6 weeks swapping them to the other nostril.



5.3.2. PEG tubes

- Check position of fixation device daily in relation to markings on the tube and tighten to correct position if necessary. This position should be confirmed before feeding is commenced to ensure that tube has not been displaced.
- Rotate tube 360° (according to manufacturer's guidance) within stoma tract 24 hours after insertion, then daily.
- Do not open or remove external fixation device for 10 – 14 days or until the tract has healed. If the tube is dislodged within the first 3 weeks before the tract has formed, it can result in peritonitis and the situation should be treated as an emergency.
- The potential lifespan of PEG tubes is 18-24 months but this can vary with individual patients. The tube may degenerate causing the PEG site to become inflamed and irritated. While in situ the PEG tube should be carefully monitored for signs of degeneration. The tube may become cracked and the tube or site may be leaking. Elective replacement should be arranged before feeding access becomes an emergency.
- The initial PEG tube must be replaced by the hospital. The PEG tube may be traction removable but some need to be endoscopically removed. If the stoma tract has matured, the PEG tube or gastrostomy tube may be replaced with a low profile gastrostomy device or button gastrostomy (see Section 4.6.). Initially this should be carried out by the hospital to ensure that the correct size is fitted.

5.3.3. Gastrostomy/transgastric jejunostomy tubes/low profile gastrostomy devices

- It is important to check the volume of water in the retention balloon every 7–10 days as small amounts can evaporate off over a period of time.

NOTE: The inflation valve will indicate the amount of water normally required to fill the balloon but less may have been used for example, to prevent retraction of the tube. It is therefore important to re-inflate the balloon with the appropriate volume of water as indicated on the hospital discharge documentation.

- Check position of fixation device daily in relation to markings on the tube and tighten to correct position if necessary.



5.3.4. Jejunostomy

- Check length of external tubing at least daily.
- Ensure security of external fixation device or sutures.

5.3.5. Flushing feeding tubes

Feeding tubes **MUST** be flushed with water before and after feeding and before and after administration of **each** medicine (see Section 5.7.2.). Additional flushes may be required to meet the patient's daily fluid requirements and so the volume and frequency of flushing should be specified in the patient's individual feeding regimen.

Type of water to be used for flushing

- **In Hospital/ Nursing Home/ Residential Home/ Day Care Centre**

'Sterile water for irrigation' to be used for all patients with enteral tube feeding whether in a recently inserted feeding tube or in a tube that has been well established for a period of time.

- **At Home**

The choice of water used will depend on a risk assessment of:

- a. The patient and:
- b. The care environment (see Risk Assessment, Appendix 3).

If the patient is identified as being at an increased risk of infection, sterile water must be used. This includes all patients with a jejunostomy feeding tube. Once a bottle of sterile water is opened, it is no longer sterile and must be discarded after use.

In all other situations cooled boiled water can be used. This requires special attention to good practice using freshly drawn tap water from the drinking supply. After boiling, this water must be stored in a clean covered container in the fridge and any unused water must be discarded after 24 hours.



5.3.6. Potential problems with feeding tubes

All Tubes

Potential Problem	Possible Cause	Action
Tube blockage	Lack of flushing	<p>Do not attempt to unblock the tube with guidewire as it may perforate the side of the tube</p> <p>Adherence to a meticulous flushing regimen, before and after the administration of each dose of each medication/feed</p> <p>Do not use smaller than a 50ml oral syringe to unblock the tube with pressure as this may cause the tube to burst. Flush the water gently into the tube</p>
	Build up of medications/feed within the lumen of the tube	<p>Ensure correct method of administration of medication</p> <p>Try to unblock using: 50 mls lukewarm water</p> <p>If still blocked try: Manufacturer's recommended declogging agent or if no recommendation is made, try pancreatic enzyme solution as below *</p> <p>NOTE: <i>These must be prescribed</i></p> <p>Do not use pineapple juice, coca cola or other sugary, fizzy drinks</p>

*Pancreatic Enzyme Solution

Contents of 3 capsules of Pancrex V	} mix with 20mls
+	} sterile
1/2 teaspoon of Sodium Bicarbonate	} water

Flush the tube with this solution and leave in place for 30 minutes before flushing with 50mls of sterile water.
(Sodium Bicarbonate activates the pancreatic enzyme)



PEG/Gastrostomy Tubes

Potential Problem	Possible Cause	Action
Tube leakage	The tube or Y adapter at the end of the PEG tube may be cracked	<p>Replace the Y-adapter or fit another one beyond the crack in the tube</p> <p>It is essential that the patient/carer always has easy access to an appropriate adapter of the correct size</p> <p>The adapter should be carefully fitted, as a good seal is essential to maintain the inflation of the internal retention bumper (follow the manufacturer’s instructions carefully)</p>
PEG/button/gastrostomy tube displacement	The tube may become accidentally displaced	<p>If the tube is dislodged within the first 3 weeks before the tract has formed, it can result in peritonitis and the situation should be treated as an emergency</p> <p>After the tract has formed, if the tube comes out inadvertently, the stoma will start to close within an hour or two and it is essential to maintain the integrity of the stoma tract</p> <p>It is essential that the patient/carer always has timely access to a replacement device</p> <p>Do not permanently replace the PEG tube with anything other than the appropriate replacement device</p> <p>A replacement tube should be fitted as soon as possible by a suitably trained healthcare professional/carer. (Refer to local protocol and/or manufacturer’s instructions)</p>



Transgastric jejunostomy or jejunostomy tubes

Potential Problem	Possible Cause	Action
The displacement of transgastric jejunostomy or jejunostomy tube	The tube may become accidentally displaced	<p>The displacement of transgastric/ jejunostomy tubes or jejunostomy feeding tubes is a problem that cannot be satisfactorily resolved in the community</p> <p>If the tube comes out inadvertently, the stoma will start to close within an hour or two and it is essential to maintain the integrity of the stoma tract</p> <p>A replacement gastrostomy device could be inserted to maintain the tract as a temporary measure. The patient should then immediately be sent to the hospital/endoscopist/surgeon who inserted the original tube for replacement</p>

5.4. Management of Gastrostomy and Jejunostomy Tube Sites (Stomas)

5.4.1. PEG/PEJ tube sites

Up to 48 hours post-insertion.

- At this stage it is essential to use an aseptic technique when cleaning/ dressing the site.
- Do not touch site and tube for 8 – 12 hours after placement.
- After 12 hours, remove dressing, observe site for signs of swelling, bleeding or infection.
- Cleanse site and fixation device with sterile 0.9% Sodium Chloride solution and gently dry.
- Apply a dry dressing **only if required** to absorb exudate.
- Do **not** release the fixation device.
- Adhere to manufacturer’s guidance in relation to tube rotation. Some devices e.g. transgastric jejunostomy devices should **not** be rotated.



After 48 hours post insertion

- A 'clean' technique using sterile equipment e.g. dressing pack with non-woven gauze should be used until the tract has healed. This may take up to 3 weeks post-insertion.
- Keep site and fixation device meticulously clean and dry.
- Do **not** release the fixation device.
- Adhere to manufacturer's guidance in relation to tube rotation.
- Patients with an abdominal stoma for gastrostomy or jejunostomy feeding should maintain/be assisted in maintaining a high standard of personal hygiene.

NOTE: *Patients may shower but should not have an immersion (tub) bath until tract has healed – approximately 3 weeks post-op.*

When tract has healed

- This is approximately 3 weeks post insertion.
- The fixation device (PEG/PEJ) should be separated from the base to allow further cleaning on a daily basis. A mild soap and disposable cloth/clean towel etc may be used for cleansing. The tube and fixation device must be meticulously dried after cleaning.
- Always ensure the tube is replaced to the correct position in relation to the fixation device when cleaning is completed.

5.4.2. Gastrostomy tubes/button gastrostomy/transgastric-jejunostomy tube sites

The care and management of the access sites of these tubes is as for the care of all PEG tubes. The main points to remember are:

- Observe the site daily for any signs of infection ie inflammation, pain, swelling, exudate or pus.
- The site should be cleaned at least daily by the appropriate method depending on the length of time post-insertion (as in Section 5.4.1.).
- Avoid the use of a dressing around the site if at all possible.
- Always ensure that the tube is replaced to the correct position in relation to the fixation device when cleaning is completed.



5.4.3. Potential problems with gastrostomy sites

Potential Problem	Possible Cause	Action
Infection or exudation around stoma site/tract	Fixation device too loose predisposing to leakage of feed/gastric juices	<p>Observe the site daily for pain, erythema, pus or skin breakdown</p> <p>At the first signs of infection send a swab to bacteriology for culture and sensitivity</p> <p>Administer the appropriate systemic antibiotics if required</p> <p>NOTE: <i>Avoid the use of topical antibiotics</i></p>
	Reduced standard of hygiene at stoma site	<p>Commence cleaning the site at least twice daily with soap and water or saline and apply povidone-iodine to the site. This can be used for up to 7 days</p> <p>NOTE: <i>Do not use creams or ointments as these may loosen the fixation device</i></p> <p>Avoid a dressing if at all possible but if leakage is excessive, a small dry dressing may be applied and changed at least twice daily or as necessary</p>
	Tube may have started to degenerate	<p>Monitor the integrity of the tube and check that it is not cracked or leaking</p> <p>Contact the endoscopist/surgeon for elective replacement of the PEG tube</p>
Overgrowth of granulation tissue	Fixation device may be too tight	<p>Check that the fixation device is able to move in and out about 1/4 inch</p> <p>Ensure tube rotation as per manufacturer's guidance</p> <p>Persistent over-granulation may require treatment under the supervision of the Nutrition Nurse or Tissue Viability Nurse. It may also require debridement by a surgeon and so advice on treatment should be sought</p>



Potential Problem	Possible Cause	Action
Leakage around site of all tubes	<p>Fixation device too loose, allowing leakage of gastric juices/feed onto the skin</p> <p>Lumen of stoma tract may be bigger than the replacement gastrostomy tube</p> <p>Delayed gastric emptying</p> <p>Intestinal obstruction</p>	<p>Tighten fixation device so that tube is only able to move 1/4 inch</p> <p>Avoid the use of barrier creams as they may cause the fixation device to loosen</p> <p>Keep the site clean and dry</p> <p>Ensure that the correct size of gastrostomy feeding tube is in position and if necessary replace it with a larger one (see below)</p> <p>Observe the patient for signs of abdominal discomfort or distension</p> <p>Refer to the doctor for monitoring of same and consideration of gut motility drugs</p> <p>If problem persists it may be necessary to consider feeding beyond the stomach, into the jejunum therefore refer the patient back to the endoscopist or gastroenterologist</p> <p>Observe the patient for signs of abdominal discomfort or distension and if necessary seek medical advice</p>
Leakage around button gastro-nomy	<p>Button gastrostomy may leak because:</p> <p>It requires decompression with a decompression tube</p> <p>The valve is no longer working and so decompression is no longer effective</p> <p>The patient has lost weight and the tube is now loose</p>	<p>See manufacturer's instructions on how to decompress with the appropriate tube</p> <p>The tube needs to be removed and replaced by appropriately trained personnel (see Section 4.6.1.)</p> <p>Another tube of the correct size needs to be fitted by appropriately trained personnel (see Section 4.6.1.)</p> <p>It may be possible to use an appropriate barrier cream to protect the skin with a Button device in situ as they are of a fixed length and cannot move within the stoma causing further leakage</p>



5.4.4. Jejunostomy tube sites

The management of the site of all jejunostomy tubes can vary according to the type of device used and the method of insertion. There may or may not be sutures in situ and these may be either temporary or permanent. It is therefore essential to follow the advice of the surgeon (see section 4.7.2.). Other general advice is as follows:

- Observe the site daily for any signs of infection i.e. inflammation, pain, swelling, exudate or pus. If infection is suspected, a wound swab should be taken and if necessary the patient treated with the appropriate systemic antibiotic.
- The site should be cleaned at least daily using an aseptic technique.

Any other problems that arise should be referred to the hospital for specialist advice.

5.5 Management of the Feed

- Commence feeding once the correct position of the tube is confirmed. With gastrostomy and jejunostomy feeding tubes always follow instructions of the technician who inserted the tube. Feeding via a gastrostomy tube can usually commence within 12-24 hrs of insertion.
- Only feeds recommended by the dietitian should be administered through the feeding tube.
- Where possible select sterile “ready to use feeds” to which a giving set can be directly attached.
- The patient’s feed should be administered according to their feeding regimen.
- Delivery of enteral feed may be via continuous infusion, intermittent infusion or bolus feeding. See Stroud et al, 2003 for further information on these modes of delivery.
- All feeds should be administered at room temperature.
- Feeds should be stored according to manufacturer’s instructions.
- Once feeding has commenced the patient should be nursed with head and shoulders raised to an angle of approximately 30° during feeding and for at least one hour after feeding stops.
- The patient should be monitored closely for both the outcome of the nutrition support being prescribed (see Section 5.1.1.) and for any potential side effects e.g. nausea, vomiting, constipation, diarrhoea, aspiration (see Section 5.5.2.).

NOTE: *Feeding tubes should be used for the administration of proprietary feed, drugs and water ONLY.*



5.5.1. Feed hanging times

Hanging times are influenced by the risk of microbial contamination in different circumstances. General guidelines for the length of hanging times for feeds are:

- Sterile feeds in pre-filled containers, up to 24 hours. Once a sterile feed has been opened it must be used within 24 hours or discarded.
- Sterile feeds that have been decanted into a sterile reservoir should hang for no more than 24 hours. Always check first that a ready-to-hang alternative is not available but if decanting the feed cannot be avoided, **an aseptic technique must be used to minimise the risk of microbial contamination of the feed.**
- Non-sterile feeds (including modular, diluted and modified sterile feeds) that are decanted into a sterile reservoir should not hang for more than 4 hours. Follow manufacturer’s instructions carefully, decanting the amount of feed required and using an aseptic technique to avoid contamination of the feed (see Section 5.6.5.). A new reservoir should be used each time feed is decanted (see Section 5.6.4.).

5.5.2. Potential problems with administration of the feed

Potential Problem	Possible Cause	Action
Nausea and Vomiting	Feeding position of the patient	Ensure head and shoulders are raised to an angle of approximately 30° during feeding and for at least one hour after feeding stops. Consider daytime feeding
	Intestinal obstruction	Observe the patient for signs of abdominal distention Refer patient to doctor urgently for assessment
	Hyperosmolar feed - rapid infusion rate	Ask dietitian to review feed and feeding regimen
	Delayed gastric emptying	Observe the patient for signs of abdominal discomfort or distention



Potential Problem	Possible Cause	Action
	Side effect of medication	<p>Refer to the doctor for monitoring of same and consideration of gut motility drugs</p> <p>If problem persists it may be necessary to consider feeding beyond the stomach into the jejunum, therefore refer the patient back to the endoscopist or gastroenterologist</p> <p>Review medication with doctor and/or pharmacist and consider alternative treatment</p>
Aspiration	<p>Swallowing difficulties (dysphagia) with oral intake</p> <p>Position of the feeding tube</p> <p>Position of the patient</p> <p>Delayed gastric emptying</p>	<p>Stop all oral intake</p> <p>Refer patient to Speech and Language Therapist for advice regarding oral intake</p> <p>Refer patient to dentist for assessment, considerable care now required with toothbrushing – dentist will advise</p> <p>Check that the tip of the feeding tube is in the correct place (see Section 4.4.3.)</p> <p>Ensure head and shoulders are raised to an angle of approximately 30° during feeding and for at least one hour after feeding stops. Consider daytime feeding</p> <p>Observe the patient for signs of abdominal discomfort or distention</p> <p>Discuss with dietitian and consider reduction of volume of feed/fluid administration i.e. changing the type of feed</p> <p>Refer to the doctor for monitoring of same and consideration of gut motility drugs</p> <p>If problem persists it may be necessary to consider feeding beyond the stomach into the jejunum, therefore refer the patient back to the endoscopist or gastroenterologist</p>
Diarrhoea	<p>Pre-existing bowel disorder</p> <p>Side effect of medication</p>	<p>Review past medical history and consider previous bowel pattern</p> <p>Discuss with doctor or pharmacist and consider alternative medication and/or the use of anti-diarrhoeals</p>



Potential Problem	Possible Cause	Action
	Infection	Send specimen of faeces to bacteriology for culture and sensitivity Ensure the appropriate infection control measures are in place and review handling of the feed, feeding system and accessory feeding equipment
	Feed	Discuss type of feed and rate of administration with dietitian
Constipation	Low residue feed	Discuss change to fibre enhanced feed with dietitian
	Inadequate fluid intake	Check patient is receiving all feed and fluid prescribed Ensure accurate record kept on fluid balance chart if appropriate Consider patient biochemistry and consider increasing patient fluid requirements, especially if patient has pyrexia or during hot weather
	Side effect of medication	Discuss with doctor or pharmacist and consider the use of laxatives

5.6. Management of Feeding Equipment

Health and social care professionals are personally accountable for their use of medical devices and therefore must ensure that they have appropriate training. They are also personally accountable for ensuring service users and carers have received appropriate training and know how to use the devices that have been provided.

Medical Devices Agency (MDA DB 2000 (04)) state that:-

- Devices designated for 'single use' must not be re-used under any circumstances.
- The re-use of 'single use' devices can affect their safety, performance and effectiveness, exposing patients and staff to unnecessary risk.
- The re-use of 'single use' devices has legal implications.



- a) Anyone who reprocesses or re-uses a device intended by the manufacturer for use on a single occasion, bears full responsibility for its safety and effectiveness.
- b) Anyone who reprocesses a 'single use device' and passes it to a separate legal entity for use has the same legal obligations under the Medical Devices Regulations as the original manufacturer of the device.

5.6.1. Administration pumps

- It is important that patients are provided with the most appropriate feeding pump.
- Pumps should be kept clean by wiping daily with a cloth moistened in a mild detergent and water solution.
- Any spills of feed onto the pump should be mopped up immediately.
- Before discharge from hospital the patient/carer should be:
 - Trained in the safe and effective use of the pump.
 - Provided with written instructions.
 - Given contact details for support should there be a problem with the pump (see Section 6).

5.6.2. Giving sets

- Giving sets labelled for 'single use' should be discarded after each feeding episode.
- Right-angled giving sets and extension sets should be managed according to the manufacturers' guidance. Consideration should also be given to the labelling of the product and the individual patient's risk of infection, the care environment and adherence to good hygienic practice (see Risk Assessment, Appendix 3).
- When connecting the female luer lock end of the giving set to the enteral feeding device, turn only to secure connection as over tightening may result in the giving set adhering inappropriately to the feeding device.
- Frequently disconnecting the giving set from the feeding tube will increase the risk of infection. When disconnection is necessary:



- Wash hands carefully and wear gloves.
- Use a non-touch technique taking care to avoid touching all connections.
- Clean connections with an alcohol wipe when disconnecting and reconnecting.
- Protect exposed end of giving set with clean/sterile cap while disconnected.
- Do not remove feed from stand – it is important to keep the giving set lower than the feed container to avoid reflux from giving set.

5.6.3. Syringes

General

- Oral, enteral or 50ml catheter tipped syringes should be used.
- It is important to note that different sizes of syringes are necessary for the flushing of tubes compared to those required for giving medicines:
 - 50ml syringes should be used for flushing enteral tubes.
 - When administering medications, use the size of syringe appropriate to the volume of medicine to be given e.g. use a 3ml syringe to administer a 2.5ml dose. Smaller syringes produce greater pressure and may split the tube, therefore administer slowly.

In Hospital/Nursing Home/Residential Home/Day Care Centre

A new oral/enteral or catheter tip syringe must always be used each time the tube is flushed or the patient receives medication.

At Home

An oral/enteral syringe for 'single patient use' may be re-used in accordance with manufacturer's guidance.

If a patient is identified as having an increased risk of infection, a new oral/enteral syringe must be used each time the tube is flushed (see Risk Assessment, Appendix 3)

NOTE: Sterile syringes must always be used for patients who have jejunostomy tubes or who are immunocompromised.



5.6.4. Reservoirs

- DO NOT TOP UP RESERVOIRS WITH FEED (see Section 5.5.1.).
- Reservoirs marked for 'single patient use' should be labelled with time and date when first used and if used for a full 24 hours feed, discarded after 24 hours.

5.6.5. Decanting equipment

- Bottle openers/can openers/scissors should be kept specifically for feeding. They should be washed as described below and dried before use.
- Utensils e.g. jugs should be washed in a dishwasher or in hot soapy water, rinsed and left to air dry. Utensils should be stored covered with paper towels or freshly laundered cloth until required.

5.7. Management of Medicines

Currently no medicines are licensed for administration via enteral feeding tubes however, drug administration by this route is frequently necessary. Not all medicines can be given via feeding tubes and alternative routes of administration of drugs may need to be used. Giving a crushed tablet in water may block the feeding tube. Nasogastric and nasojejunal tubes are long fine bore tubes that block easily. Gastrostomy and jejunostomy tubes are shorter and have a wide bore so are less likely to become blocked.

Oral syringes

Medicines to be given through feeding tubes must be measured using oral syringes and **not** using hypodermic syringes. Oral syringes have a different tip, which cannot connect to an IV cannula or attach to a needle. Reports in the literature describe oral medications being accidentally injected because they were drawn up using a hypodermic syringe.



Liquid medicines

Liquid medicines are not always the best way to give drugs via feeding tubes:-

- They may contain large amounts of sorbitol e.g. Ranitidine Syrup, causing abdominal cramps and diarrhoea.
- They are mostly designed for use in children so are of low strength and hence require large volumes to be given e.g. Paracetamol Suspension.
- Many are thick and viscous liquids and therefore cause difficulties administering down narrow tubes e.g. Paracetamol Suspension.
- Not all medicines can be prepared as liquids as they may be unstable or highly irritant when in solution e.g. Alendronic Acid.
- Not all suspensions can be diluted to reduce their viscosity e.g. Lansoprazole Sachets.



5.7.1. Medicines NOT to be given through feeding tubes

Medicines NOT to be given through feeding tubes	Rationale
Sublingual/buccal tablets	Formulated for absorption across the oral mucosa and are ineffective if administered through feeding tubes
“Melt” tablets	Designed to dissolve in the saliva, be swallowed and then absorbed in the gastrointestinal tract
Chewable tablets	Form a sticky mass when crushed
Enteric-coated products (denoted as e/c in the BNF)	These have a protective coating either to prevent inactivation by stomach acid or to prevent the stomach from damage by the drug. Crushing enteric-coated tablets or the enteric-coated pellets from a capsule destroys this coating
Controlled, extended and sustained release products (denoted as m/r in the BNF)	Are formulated to release the drug slowly in the GI tract. Crushing or breaking tablets or opening capsules can destroy their slow release properties increasing the risk of side effects, toxicity and reducing their duration of action
Injections	Must not be given through feeding tubes unless specifically advised by a pharmacist
Cytotoxic preparations	Must not be given through feeding tubes unless specifically advised by a pharmacist

5.7.2. Flushing

- Adequate flushing of feeding tubes is essential to ensure that the full dose of a drug is delivered to the patient and that the patency of the tube is maintained (see Section 5.3.5).
- Water should be used. The type of water depends on a Risk Assessment of both the patient and the care environment (see Risk Assessment Appendix 3).
- For adults, 30mls of water should be used for flushing before and after drug administration.
- When several drugs are to be given, each should be given separately, not mixed and the tube flushed with 5 – 10mls of water between each drug.



5.7.3. Potential problems with medicine administration

Potential Problems	Prevention
Not all medicines are available commercially as liquids	Use soluble tablets. A pharmacist may be able to prepare certain liquid preparations on request. The pharmacist must be made aware that the liquid is for administration via an enteral tube and the route of administration must be specified
Liquid medicines are not always the best option. They may cause cramping and diarrhoea particularly in post-pyloric feeding. Diarrhoea may be due to the liquid being hyperosmolar or due to the sorbitol content. Some drugs favour the acidic conditions of the stomach for absorption (e.g. Ketoconazole) and may be incompletely absorbed when administered directly into the jejunum through an NJ or jejunostomy tube	Use the information sources outlined in Section 5.7.4. to ensure that you are using the most appropriate formulation of the medicine and for advice on alternatives if necessary
The medicine may react with the feeding tube	Use the information sources outlined in section 5.7.4. to check compatibility and recommend an alternative if necessary.
The medicine may interact with the enteral feed	Use the information sources outlined in Section 5.7.4. Do not administer medicines at the same time as feeds.
Many of the medicines used to treat cancer produce a hazardous dust when crushed or if the capsules are opened These should not be crushed nor the capsules opened	These should not be crushed nor the capsules opened Contact the relevant hospital pharmacy department or Northern Ireland Regional Medicines and Poisons Information Centre at the Royal Group of Hospitals, who may be able to advise on alternative routes of administration and formulations
Giving a crushed tablet in water may block the feeding tube. Nasogastric and nasojejunal tubes are long, fine bore tubes which block easily. Gastronomy and jejunostomy tubes are shorter and have a wide bore so are less likely to become blocked.	



5.7.4. Information sources

- Pharmacists can advise on the most appropriate medicine and formulation.
- “Administration of drugs via feeding tubes” 2nd edition published by the Pharmacy Dept, The Royal Group of Hospitals, Belfast, is a practical guide to giving medicines through feeding tubes.
- Local hospital pharmacy departments and the Northern Ireland Regional Medicines and Poisons Information Centre (Tel 028 9024 8095) are useful sources of information.

5.8. Documentation

Baseline information should be recorded clearly in the patient’s clinical records and in the discharge communication (see Discharge Summary, Section 6.7.). The information that is essential to the ongoing management of the patient is:-

- Patient’s clinical condition.
- Nutrition:
 - Nutritional status e.g. weight/BMI
 - Nutritional requirements.
 - Nutritional intake - oral and tube feed.
 - Feeding plan including information on tolerance.
- Details concerning biochemical abnormalities.
- Medications prescribed and method of administration.
- Tube details - date of insertion, make of tube, batch number, French gauge, length of external tubing visible, volume of water in retention balloon, if appropriate.
- Condition of stoma and site and method of fixation if necessary.
- Pump type and serial number.
- Swallowing status (in dysphagic patients):-
 - Speech and Language Therapy assessment date and recommendations.
 - Quantity, frequency and consistency of fluid and food allowed.
- Dentist’s assessment, recommendations and details of oral hygiene programme.



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SECTION 6

DISCHARGING A PATIENT ON HOME ENTERAL TUBE FEEDING

6.1. Planning For Discharge

Planning for discharge should start as soon as possible, in order to facilitate the organisation and good quality of care for patients requiring enteral feeding in the community. It is important that patients are established on a feeding regimen, which meets their requirements prior to discharge. However in some cases this cannot be completed and interventions initiated in the hospital environment are completed in the patient's home. Alternatively, they might need to be undertaken predominantly in the home environment.

A patient's admission can range from an extended period of time to a day procedure, depending on the complexity and stability of their medical condition.

6.1.1. Aim

To ensure that the patient is discharged from hospital into the community safely and with adequate support.

6.1.2. Objectives

- To provide an adequate level of patient/carer training prior to discharge.
- To ensure effective liaison with the community health and social care team.
- To identify a realistic and timely discharge plan which will meet the changing needs of the patient in the home environment.
- To ensure the patient receives adequate support and monitoring in the community.
- To ensure all patients on home enteral feeding are registered on the British Artificial Nutritional Survey (BANS) with their consent.

6.2. Education

6.2.1. Patient and/or carer training

Patients and/or carers must be trained so they are able to carry out enteral tube feeding with confidence, in the simplest, safest and most effective way. They should be able to recognise potential problems and know the route to solving them.



Training should start as early as possible in hospital, however, the decision of when to start should be made with sensitivity.

6.2.2. Environment

The training should be performed in a relaxed, quiet environment in which the patient and/or carer feels safe and allows privacy for discussion.

6.2.3. Trainer

The trainer should be fully competent in all aspects of enteral tube feeding:-

- Reasons for enteral tube feeding.
- Routes used in enteral tube feeding.
- The different types of tubes and their care.
- The enteral tube feeding system.
- Trouble-shooting.

The trainer should also know when and where to access other health professionals.

All professionals training the patients and/or carers must receive appropriate training.

The patient and/or carer will be told the name of the trainer, their job and be given a contact number for them.

6.2.4. Home Enteral Tube Feeding Learning Goals

(A) Before discharge the patient and/or carer will **know**:-

- The reason for enteral nutrition e.g. risk of aspiration due to swallowing difficulty.
- Whether some oral intake is permitted and if so quantity, frequency and consistency of fluids and foods and facilitatory/compensatory swallowing techniques.
- Why and how the mouth and teeth should be cleaned.
- How to manage the feeding system.
- How to minimise the risk of infection (see Section 5).
- How to prevent and recognise complications including infections, aspiration and mechanical complications such as occlusion, misplacement and malfunction of the tube.



- How to clear a blocked tube.
 - How to change malfunctioning parts of the tube.
 - How to check the fluid content of the balloon in appropriate devices.
 - How to take care of the stoma if applicable.
 - How to obtain enteral feed.
 - Storage and hanging times of enteral feeds.
 - How much feed to give and how often.
 - How to feed by gravity in event of pump malfunction.
 - How to obtain ancillary items.
 - How often to replace ancillary items.
 - Names of personnel to contact 24 hours a day.
 - Who is responsible for their continued hospital care and where and when they will be reviewed.
- (B) Before discharge the patient and/or carer will **be able to:**
- Check the position of the tube.
 - Secure the tube adequately.
 - Remove and replace the sterile water in the balloon of their feeding access device.
 - Prepare the feed for administration.
 - Connect the feed to the feeding tube.
 - Programme the feeding pump.
 - Administer a bolus down the tube.
 - Administer medications down the tube.
 - Disconnect the feed and flush water down the tube.

6.2.5. Literature

Written information on all of the above (A & B) **must** be given to the patient and/or carer before discharge.

6.3. Provision of Feed and Ancillary Items

Patients should be discharged from hospital with supplies of feed and ancillary items in accordance with locally agreed procedures.



6.3.1. Equipment

The patient should be discharged with the following:

- Feeding pump and dripstand*.
 - Feed.
 - Giving sets.
 - Syringes.
 - pH sensitive paper*.
 - Pancreatic enzymes for unblocking tubes (see Section 5.3.6.).
- *If appropriate.

Local arrangements should be in place for the provision of Y adapter repair and replacement kits.

6.4. Communication

Before the patient is discharged, it is essential that all key community health care professionals are contacted by telephone and in writing. This communication should begin as early as possible.

6.4.1. Documentation

When it is planned to discharge a patient, a designated key worker will ensure that all baseline information is documented in the Discharge Summary (see Section 6.7.) and this information will be communicated to relevant healthcare professionals.

The information can be communicated by:-

- Post.
- Fax (with precautions taken to protect confidentiality e.g. telephone recipient first who must be waiting to receive the fax).
- E-mail (encrypted).
- Telephone.

Most importantly it should reach the intended recipients as early as possible BEFORE discharge.



6.5. Home Enteral Tube Feeding Register

The Home Enteral Tube Feeding Register was established in 1990 by the Parenteral and Enteral Nutrition Group (PENG) of the British Dietetic Association (BDA) to collect data on the profile of enteral feeding in the community. In 1996 this information was incorporated into The British Artificial Nutritional Survey (BANS) to monitor the growth of artificial nutritional support in both hospitals and the community.

Consent should be obtained from the patient to register them with BANS before discharge.

6.6. Patient/Carer Support

In addition to the information in Section 6.2.4. the patient/carers should be informed of an available support group and given contact details.



<i>Type and size of feeding tube:</i>	<i>Date tube placed:</i>
<i>Fluid content of balloon if present:</i>	<i>External length of feeding tube:</i>
<i>Pump type and serial number:</i>	<i>A Guide to Your Medicines form completed: YES/NO</i>
<i>Key contact names/numbers in hospital:</i> Referring Consultant: Endoscopist: Speech & Language Therapist: Dietitian: Nurse: Specialist/Ward: Pharmacist: Others:	<i>Key contact names/ numbers in community:</i> Care Manager: GP: District Nurse: Community Dietitian: Speech & Language Therapist: Community Pharmacist: Dentist:
<i>Hospital review arrangements:</i>	<i>Consent given by patient for inclusion on BANS register:</i>

Additional Information:

Signature _____

Date _____

Designation _____

A GUIDE TO YOUR MEDICINES



Name and strength of medicine	Common (brand) name	What is it for	How much liquid/many tablets to take				Other information
			Breakfast time	Lunch time	Tea time	Bed time	
Medicines to be taken when needed e.g. painkillers, laxatives etc							
Completed by:			Signature:			Date:	

Remember to flush
 Flush feeding tube with 30ml of sterile water (5-10ml for children) before and after giving medicine. If more than 1 medicine is being given flush with 5-10ml of sterile water between each medicine as well.



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SECTION 7

COMMUNITY FOLLOW-UP AND REVIEW

Although a patient or carer may be competent to manage their home enteral tube feeding independently, they still require input from key healthcare professionals. It has been reported that patients and carers find the first few weeks post-discharge the most difficult and report the greatest number of problems (Mensforth, 1999). It is important to ensure continuity of care for patients and the appropriate health care professionals are involved post-discharge and in ongoing monitoring of the patient.

Primary care health professionals will support and participate in the continued education of patients and carers, in the management of the feeding system and other aspects of enteral feeding. Some patients may attend day centres, special schools or carers may avail of respite facilities - additional training may be required for staff in these environments.

Professional standards should be developed and put in place to:

- Ensure that patients achieve and maintain optimum nutritional status.
- Minimise complications associated with HETF.

7.1. Frequency of Review

Initial

- The district or community nurse should visit the patient in his or her own home on the day following discharge.
- The community dietitian should review the patient within the first week of discharge (Mensforth, 1999).
- The community speech and language therapist should review patients within 4 weeks of discharge (Royal College of Speech and Language Therapists 1997/98).

Dietetic follow-up

In general the frequency of follow-up will be determined by:

- Patient's underlying clinical condition.
- Nutritional status.
- Complications of enteral tube feeding.



Planned reviews should be made within 2-6 weeks of the initial dietetic assessment in the community for all patients who meet at least one of the following criteria:

- Reside in their own home.
- Have a diagnosis of cancer.
- Have some oral intake.
- Require a change in their feeding regimen at the initial appointment.
- Type 1/Type 2 diabetes mellitus.
- Are experiencing complications e.g. gastrointestinal problems.

Following the first review, patients in any of the above categories should be reviewed 3 months later, as long as their clinical condition allows it and the patient and family are satisfied. Patients who are stable (mainly those in nursing homes) should be reviewed every 6 months. All patients and their carers should have a contact number should any problems arise in the interim period and necessitate a prompt review (Madigan et al, 2002).

Speech and Language Therapy follow-up

Swallow review by Speech and Language Therapists should occur periodically as swallow improvement may be slow, ranging from months to years.

District/Community Nurse follow-up

The district or community nurse should obtain the blood specimens as required for the monitoring of the patient's biochemical profile.

Frequency of district or community nurse follow-up is dependent on individual patient needs and should be assessed at the initial review. During this assessment, consideration should be given to:

- The support required by the patient/carer to manage the feeding tube and feeding system.
- The condition of the feeding tube and site.
- The length of time the tube is in situ.
- The need to provide ancillary items.
- The need to obtain blood samples for biochemical monitoring.

7.2. Parameters To Be Reviewed

The following aspects of patient care need to be reviewed on a regular basis. Decisions regarding the nutritional management of the patient should be based on this information.



7.2.1. Patient

- Clinical condition e.g. change in ability to swallow, disease state, presence of pressure sores/ulcers, infection etc.
- Oral health, ensuring patient or carer's oral hygiene practice matches changing patient circumstances.
- Quality of life maintained/improved by nutrition support.
- Ability to comply with and tolerate the nutrition therapy.
- Patient and/or carer able to cope with changes in lifestyle.
- Patient and/or carer demonstrate ability to perform procedures to acceptable standards.
- The environment is appropriate for the safe and effective use of nutrition support.

7.2.2. Nutrition

Nutritional status.

- Weight history.
- BMI.

Daily nutritional requirements.

- Energy.
- Protein.
- Fluid.

Nutritional Intake.

- Oral diet (if appropriate).
 - Quantity.
 - Nutritional value.
 - Does intake/consistency match that recommended?
- Tube feed.
 - Type of feed.
 - Rate of feed.
 - Volume delivered versus prescribed volume.
 - Signs of intolerance to feed.



- Fluid Balance.
 - Intake.
 - By mouth.
 - By tube.
 - Feed.
 - Flushes.
 - Medication.
 - Output.
 - Urinary.
 - Losses via GI tract.

7.2.3. Biochemistry

Full blood picture and a biochemical profile (to include sodium, potassium, urea, creatinine, glucose, albumin and liver function tests) should be measured in all patients shortly after discharge to the community and subsequently on an annual basis.

The above biochemical and haematological tests, in addition to serum calcium, phosphate and magnesium, should be repeated if there is a change in the patient's clinical condition. This might include significant weight loss, recurrent infections or the development of other new clinical symptoms.

Micronutrient deficiency is unlikely to arise in patients on long term enteral nutrition, as patients will be receiving full replacement doses of micronutrients in almost all cases. Therefore, monitoring of vitamin or trace element status is not indicated, unless specific symptoms develop suggesting deficiency or toxicity. If this is suspected, please consult with the Biochemistry Laboratories at Belfast City Hospital or the Royal Group of Hospitals with regard to appropriate tests and sample requirements.

7.2.4. Medications

- Changes to prescribed medication.
- Administration:-
 - Dose.
 - Timing in relation to feeding.
 - Method of administration.
- Side effects of medication in relation to tolerance of feed.



7.2.5. Feeding Tube

- Condition.
- Length of time in situ.
- Length visible.
- Tube rotation.
- Routine checks on tube position before use.
- Evidence of tube blockage.
- Check fluid content of balloon in appropriate devices.
- Record tube details as listed in Section 5.8. if tube is replaced.

7.2.6. Stoma

- Condition of stoma.
- Presence and type of exudate.
- Overgranulation of stoma.
- Presence of unnecessary dressing.
- Fit and condition of fixation device.

7.2.7. Pumps

- Accuracy.
- Battery life.
- Annual servicing.
- Cleanliness.
- Appropriateness for patient.

Based on information gathered at review, each discipline should devise an action plan which incorporates any necessary changes to current patient management. This should be documented and communicated to the relevant healthcare professionals.



7.3. Transitional Feeding

If the patient is changing over to oral diet, they should be achieving adequate nutritional intake by this method before home enteral tube feeding is stopped. Dietetic involvement is essential to ensure this. If swallowing difficulties are present, a Speech and Language Therapist will be required to assist in the transition from enteral tube feeding to oral intake.

7.4. Discontinuing Home Enteral Tube Feeding

Enteral tube feeding should only be discontinued if: -

- Full nutritional requirements are being met via the oral route.
- The risks of continuing enteral tube feeding are judged to exceed the potential benefits.
- Further aggressive nutritional support is undesirable by the patient or legal guardian in accordance with trust policy and existing law (see Section 3.).

Regular monitoring and review is essential in identifying the above situations.

7.5. Removal of Feeding Tubes

If sustained achievement of nutritional requirements without enteral tube feeding is in doubt, it may be useful to keep the feeding tube in place for an agreed period of time or until the doubt is removed. The decision to remove the feeding tube should be multidisciplinary.

Special instructions exist for removal of **gastrostomy tubes**. Whilst manufacturers' guidelines must always be adhered to, the following general principles apply:-

- Do not remove for at least 14 days after insertion.
- With balloon devices, deflate balloon then use gentle traction to remove.
- Vigorous pulling may be necessary for gastrostomies held in place by a deforming device.
- Tubes with rigid fixation devices are usually removed endoscopically. However, recent evidence suggests if they are cut off close to the skin and pushed through the stomach, they will pass through the gut spontaneously. This method should not be used if there is any suspicion of distal strictures. NOTE: *Overall, 2% will not pass*, Stroud et al, 2003.



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Torrance, October 1996 Royal College of Speech and Language Therapists.



Appendix 1

MEMBERSHIP OF THE CREST HOME ENTERAL TUBE FEEDING WORKING GROUPS

Steering Group

Chair:	Mrs J Holmes, M.B.E. Nutrition and Dietetic Services Manager The Royal Hospitals
	Dr A Beirne Consultant Geriatrician Altnagelvin Hospital
	Dr A Black Consultant Paediatrician, Ulster Hospital
	Dr P Cobain Prescribing Advisor, NHSSB
	Mrs F L'Estrange Community Dietitian, EHSSB
	Dr M McCarthy Senior Medical Officer, DHSSPS
	Mrs A McVeigh Director of Healthcare Services and Nursing, Armagh & Dungannon HSS Trust
	Mrs E Moore Chief Dietitian, The Royal Hospitals
	Mrs E Qua Principal Nurse, Health Estates, DHSSPS
	Mrs M Waddell Director of Nursing, EHSSB
Secretariat:	Mr G Hannan Miss A Lowry



Clinical Indications Sub-Group

Chair:

Dr A Beirne
Consultant Geriatrician, Altnagelvin Hospital

Mrs S Aitcheson
Ward Sister, Stroke Unit, Ulster Hospital

Mr D Brooker
Consultant Surgeon, The Royal Hospitals

Mr K Gardiner
Consultant Surgeon, The Royal Hospitals

Ms A M Magorrian
Speech & Language Therapist, Belfast City Hospital

Mr G McBride
Consultant ENT Surgeon, Altnagelvin Hospital

Ms M Munnis
Dietitian, Braid Valley Hospital

Dr M Power
Consultant Physician, Ulster Hospital

Dr S M Rea
Consultant Psychiatrist, Altnagelvin Hospital



Patient Management Sub-Group

Chair: Mrs J Holmes, M.B.E.
Nutrition and Dietetic Services Manager
The Royal Hospitals

Members: Mrs M Bradley
Community Dentist, Homefirst Community Trust

Ms P Brown
Infection Control Nurse, WHSSB

Mr R Brown
Consultant Surgeon, Daisy Hill Hospital.

Ms D Campbell
Infection Control Nurse, Causeway Hospital

Ms K Dolan
WHSSB Interface Pharmacist, Erne Hospital

Mrs J Fee
Registration and Inspection Unit, Tyrone & Fermanagh
Hospital

Mrs R Fair
Clinical Pharmacy Co-ordinator, The Royal Hospitals

Mrs L Hamilton
Senior Dietitian, Causeway Hospital

Ms J Harpur
Speech & Language Therapist, Thompson House Hospital

Ms F L'Estrange
Community Dietitian, EHSSB

Ms S Madigan
Community Dietitian, EHSSB



Mrs E Moore
Chief Dietitian, The Royal Hospitals

Dr K McCollum
General Practitioner, Keady

Ms M McCrabbe
Community Nurse Manager, Strabane Health Centre

Mrs A McVeigh
Nurse Commissioner, SHSSB

Ms R Smyth
Nutrition Nurse, The Royal Hospitals

Ms O Stewart
Senior Speech & Language Therapist, Altnagelvin Hospital

Dr T Tham
Consultant Gastroenterologist, Ulster Hospital

Ms M Tynan
Community Dietitian, Omagh Health Centre

Mrs J Watson
Senior Infection Control Nurse, Ulster Hospital

Mrs K Woodside
Nutrition Nurse, The Royal Hospitals

Professor I Young
Clinical Biochemist, The Royal Hospitals



Pharmaceutical Supplies and Funding Issues Sub-Group

Chair: Dr P Cobain
Prescribing Advisor, NHSSB

Dr C Fitzpatrick
Medical Advisor, EHSSB (Chair from 6 May 2003)

Members: Mrs G Caldwell
District Nurse Team Leader, Craigavon & Banbridge Trust

Mr S Blackley
Assistant Director of Contracts, CSA Regional Supplies

Ms C Casey
Community Dietitian, Whiteabbey Hospital

Ms L Donnelly
Health Promotion Commissioner, SHSSB

Mrs R Fair
Clinical Pharmacy Co-ordinator, The Royal Hospitals

Dr C Fitzpatrick
Medical Advisor, EHSSB

Mr M Guerin
Chairman, Pharmaceutical Contractors Committee

Mr J Johnson
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Appendix 2

PROCEDURE FOR FINE BORE NASOGASTRIC FEEDING TUBE INSERTION

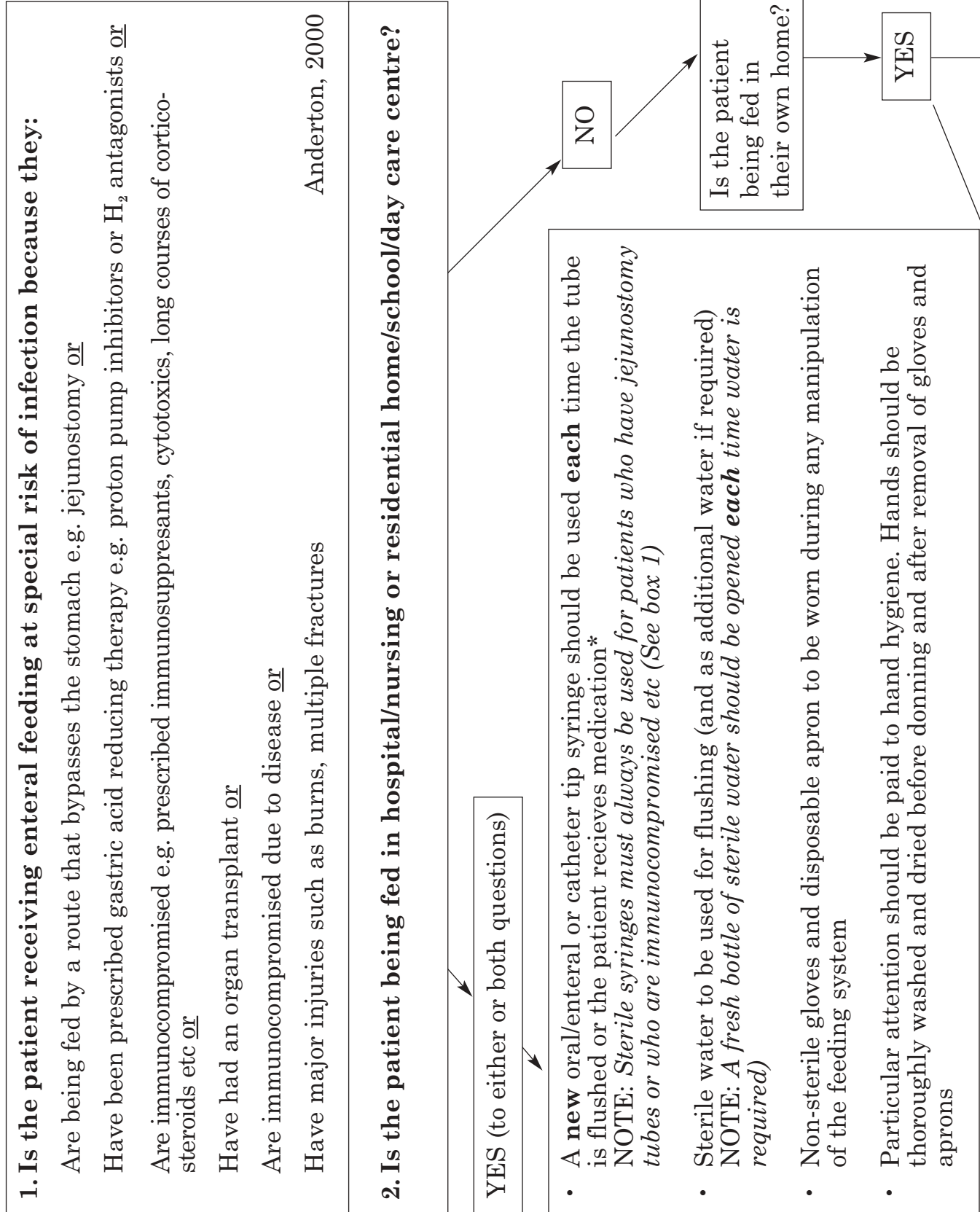
- Explain the procedure to the patient.
- Help conscious patients adopt a comfortable semi-recumbent position.
- Explain the importance of not tilting the head backwards.
- Arrange a method of signalling to enable the patient to request procedure to proceed slowly or stop.
- Wash hands and put on gloves to reduce the risk of cross-infection.
- Determine the length of tube required to be inserted if the tip of the tube is to lie in the stomach by:-
 - Placing the tip of the tube against the xiphoid sternum.
 - Passing the tube behind the ear, over the top of the ear and to the tip of the nostril and marking this position on tube.
- Lubricate the tip of the tube with water.
- Ask patient to blow his/her nose or clean nostril gently.
- Introduce the tube into the nostril and advance it forward. If obstruction is encountered, withdraw slightly then advance the tube at a slightly different angle. Gentle rotation of the tube can be helpful.
- If the patient can co-operate request that when the tip of the tube is felt in the throat (oropharynx) he/she swallows tilting the chin downward slightly at the same time. This process may also be aided by sipping water through a straw.
- Advance the tube forward maintaining a calm manner at all times encouraging the patient to take slow even breaths.
- When the mark on the tube reaches the nostril, tape the tube to the cheek and check the position of the tip.
- Check the position of the tube by method described in local guidelines.
- Anchor tube securely to the nose and cheek keeping it out of the patient's visual field.

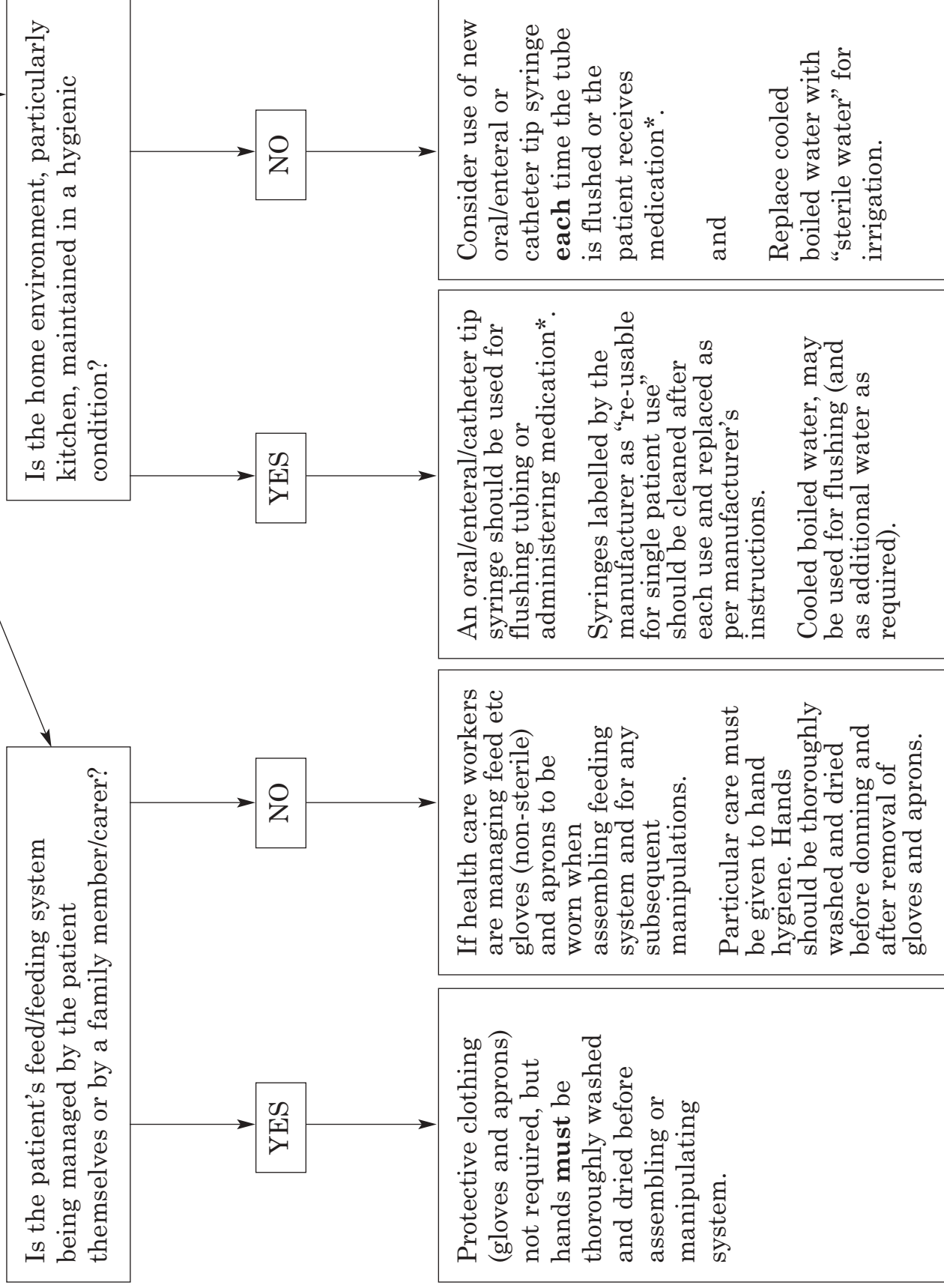


- Record the procedure and technique used to confirm position in nursing/medical notes.
- Feeding can commence when tip of tube is confirmed to be positioned correctly.

“Risk Assessment of Patient’s Susceptibility to Infection”

Appendix 3





* Medicines should be measured using **oral** syringes and **not** hypodermic syringes



Appendix 4

GUIDELINES FOR ORAL HYGIENE FOR THE DEPENDENT DYSPHAGIC PATIENT

Cleaning Teeth and Oral Mucosa When Patient has Dysphagia

- Wear gloves, protective glasses. *
- Position patient upright or semi upright with head supported and remove any dentures.
- Ideally tooth brushing should be undertaken by 2 carers/staff.
- Ideally suction should be available, alternatively use an aspirating toothbrush.
- Access and vision are improved when tooth brushing is undertaken by carers positioned in front of the patient and by using a light source, e.g. pen torch.
- Use a dry medium textured toothbrush and a small smear of fluoride toothpaste so that foam production is minimized.
- Pink foam sticks may be used to swab mucosa but have no use in the cleaning of teeth.
- Lemon and glycerine swabs should never be used.
- Clean all surfaces of the teeth, paying particular attention to the tooth gum margin, with continuous suction.
- Gently clean the tongue, palate and cheek mucosa with a soft toothbrush.
- Where the patient's gums are bleeding, continue tooth brushing and brush more often - where there is no improvement, seek further dental advice.
- Where calculus is present, seek dental advice.
- **All problems should be referred to the dentist for advice.**

Record all mouth care interventions in patient's clinical record

When a patient becomes critically ill, enters a high dependency ward or is intubated, their oral hygiene programme should be reassessed.

* As per local cross infection policy.



Care of Dentures When Patient has Dysphagia

- Wear gloves, protective glasses. *
- All dentures and partial dentures should be removed and thoroughly cleaned at least once a day.
- Brush all surfaces of the denture, paying particular attention to the fitting surfaces, and/or any metal clasps on partial dentures.
- Use a toothbrush or denture brush and unperfumed soap or denture cream (avoid toothpaste as it is too abrasive).
- Clean dentures over a basin of water (to prevent breakage if dropped).
- Gently clean the tongue, palate and cheek mucosa with a soft toothbrush.
- Rinse dentures thoroughly and return to mouth.
- **Always remove dentures at night, clean them and leave to soak in cold water.**
- If a patient insists on wearing dentures at night negotiate a more suitable period of time for their removal.
- **If dentures appear to be ill fitting, refer to dentist.**

Record all mouth care interventions in patient's clinical record

When a patient becomes critically ill, enters a high dependency ward or is intubated, their oral hygiene programme should be reassessed.

* As per local cross infection policy.

Reference: British Society of Disability and Oral Health, (2000). Guidelines for the Development of Local Standards of Oral Health Care for Dependent, Dysphagic, Critically and Terminally Ill Patients.



Appendix 5

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These guidelines have been published by the Clinical Resource Efficiency Support Team (CREST), which is a small team of health care professionals established under the auspices of the Central Medical Advisory Committee in 1988. The aims of CREST are to promote clinical efficiency in the Health Service in Northern Ireland, while ensuring the highest possible standard of clinical practice is maintained.

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Further copies of this booklet and laminated charts may be obtained from:

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