

Nurse Practice Committee

Guidelines on the Management of Enteral Feeding 2nd edn **Feeding via PEG, Mic-Key**

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1.0 Introduction

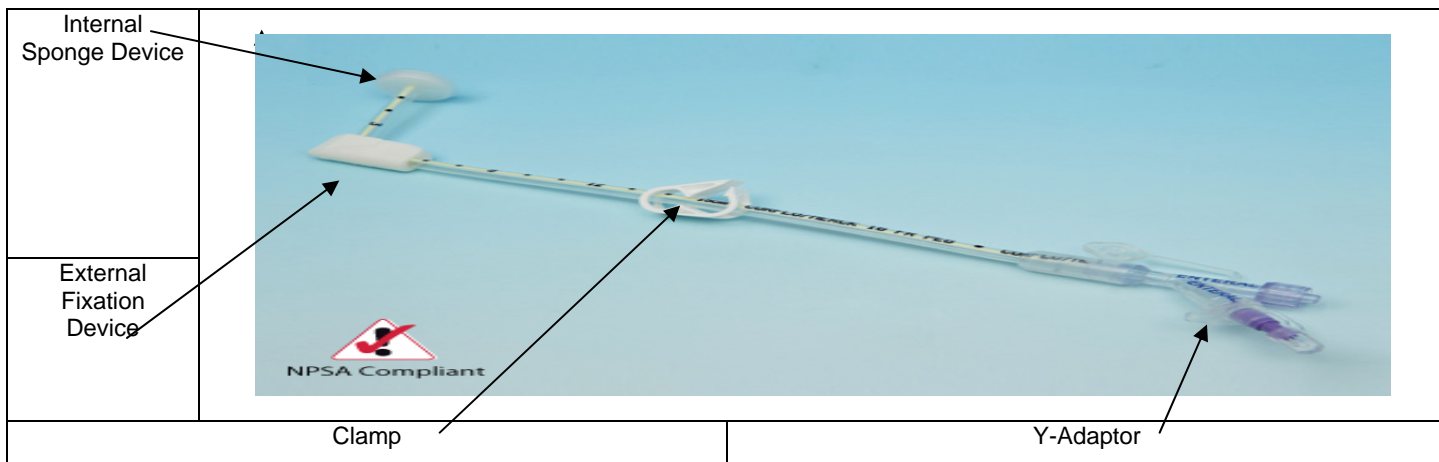
Balanced and adequate nutrition supports normal growth and development and healing. If the ability to eat or swallow is lost or the child is unable to tolerate food, enteral feeding can sustain life and nourish and increase body weight. Enteral feeding is also used to supplement a deficient food and fluid intake.

Definition: A **gastrostomy** is an opening from the abdominal wall to the stomach, where a tube is placed, via laparotomy/endoscopy, through the abdominal wall directly into the stomach for either temporary or permanent delivery of enteral feed or drainage of gastric contents (Payne-James et al 2001, Howe et al 2010). There is a reduced risk of tube displacement compared to nasogastric tube feeding and therefore less risk of pulmonary aspiration, frequent reintubation and interruptions to feeding (Howe et al 2010). When a gastrostomy is indicated as the route of choice, the type of tube and insertion method will depend on the clinical condition of the child and will be determined by the surgeon.

2.0 Percutaneous Endoscopic Gastrostomy (PEG) Tube

Introduction:

A PEG is usually the first type of gastrostomy tube chosen by surgeons as it facilitates the formation of a tract between the stomach and outer gastrostomy stoma. It is inserted via the abdominal wall into the stomach under general anaesthetic. It is made from medical grade polyurethane and can last for up to two years or longer. There are many types of PEG tubes available from various manufacturers. The CORFLO PEG tube illustrated in the diagram below is currently used in OLCCH.



Definition of a PEG:

A PEG is a gastrostomy that has been inserted under anaesthetic via endoscopy (Payne-James et al 2001).

Indications for the insertion of a gastrostomy tube: (this is not an exhaustive list) (Simpson 2002)

Conditions that may affect swallowing including trauma, mucositis or any condition where nasogastric feeding is not tolerated	Anorexia associated with chronic illness, e.g. malignancy, renal disease
Congenital abnormalities such as oesophageal / coanal atresia	Long term failure to thrive
Oesophageal injury	Cystic fibrosis
Cerebral palsy/ neurological impairment	Inborn errors of metabolism
Breathlessness during feeding (e.g. Congenital Heart Disease)	High nutritional intake needed (e.g. burns, trauma injuries, neural injury)

Contraindication to the insertion of a PEG tube: (this is not an exhaustive list) (Simpson 2002)

Gross ascites	Gastroparesis
Severe obesity	Oesophageal / gastric varices and / or ulceration
Clotting abnormalities	

Indication for a PEG tube change

PEG tubes are permanent and can only be inserted under a general anaesthetic. PEG tube changes are normally only performed when there is a problem e.g. blocking of tube, accidental dislodgment or untreatable infections at stoma site causing colonisation of PEG tube and can only be reinserted under a general anaesthetic.

Complications associated with PEG tubes are: (this is not an exhaustive list) (Simpson 2002)

Malposition	Leakage around the stoma site,
Tube displacement / accidental removal	Breakage or rupture of the tube
Granulation tissue	Infection of stoma site
Tube Blockage	Stoma closure (may close within a few hours if accidentally removed)
Peristomal (around the stoma) infection	

Equipment

- Sterile gauze
- Gloves – non sterile

- Sterile Water
- Dressing (Mepilex Border lite ®)

Care of a PEG tube

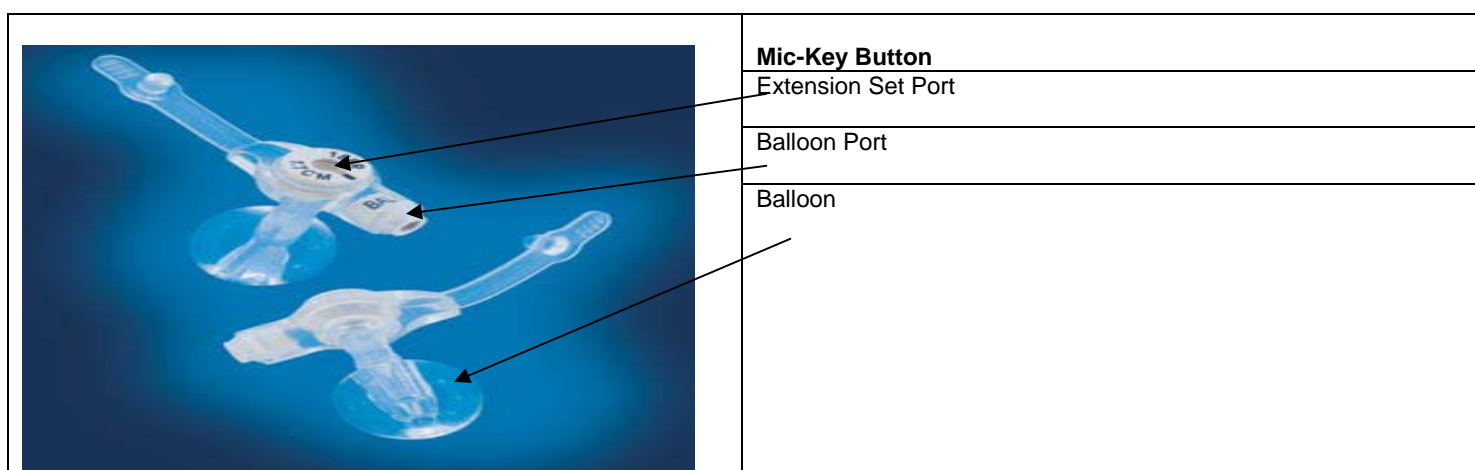
ACTION	RATIONALE & REFERENCE
<p>Explain procedure to child / parents/ carers</p> <p>Collect all the appropriate equipment</p> <p>Decontaminate hands and put on non-sterile gloves and disposable plastic apron if appropriate.</p> <p>Cleaning (from Day 1 post operatively and daily thereafter)</p> <ul style="list-style-type: none"> • Remove any dressings (if in situ) • Dispose of any old dressing appropriately • Observe stoma and surrounding area for signs of redness, swelling, irritation, skin breakdown and leakage of stomach contents • Clean the stoma site, surrounding area, external fixation device, clamp, PEG tubing and Y-Adaptor with sterile water solution • Perform a swab if the stoma and surrounding area displays signs and symptoms of infection • Pat dry <p>Rotate</p> <ul style="list-style-type: none"> • Rotate the PEG tube 360° degrees, commence 72 hours post insertion and daily thereafter <p>Dressings (Specific dressing information)</p> <p>Day 1-14 (post operatively):</p> <ul style="list-style-type: none"> • Cover with a Mepilex Border lite® absorbent dressing <p>Day 14 onwards:</p> <ul style="list-style-type: none"> • Use absorbent dressings if required (heavy discharge / leakage) - Allevyn gentle border®, Mepilex border® or border lite® <ul style="list-style-type: none"> • Avoid the use of talcum powder or creams unless prescribed <p>Bathing and showering</p> <p>Bed baths for the first 2 weeks post insertion following which the child can have a bath or shower if the stoma has healed</p> <p>External Fixation Device</p> <p>Ensure the External Fixation Device is closed at all times</p> <p>Leave external fixation device in situ during the first 3 months. If it is:</p> <ul style="list-style-type: none"> • too tight on the child's abdomen, seek immediate advice from the surgeon or Nutrition Support Nurse as the device may need to be loosened. • too loose on the child's abdomen, contact Surgeon or Nutrition Support Nurse for advice. <p>Y-Adaptor</p> <p>Ensure the Y-Adaptor is secure to the PEG tube</p> <p>In the event of breakage or dislodgement of the Y-Adaptor, spare Y-Adaptors are available from the Material Management Department and stored in the Store Room.</p>	<p>To ensure child and parent(s) understands the procedure and gain their trust and co-operation (Trigg & Mohammed 2010)</p> <p>To prepare environment (Trigg & Mohammed 2010)</p> <p>Prevention of cross infection (HSE 2009, OLCCH 2010a, 2011b, 2011a)</p> <p>To gain access to the stoma</p> <p>To prevent cross contamination (OLCHC 2010b, HSE 2009)</p> <p>Early detect of complications (Dougherty & Lister 2010)</p> <p>To remove any exudate (NICE 2003)</p> <p>As per local guidelines (OLCHC 2008)</p> <p>To remove any excess cleaning fluid and create a dry medium that is less conducive for microbial contamination</p> <p>To prevent tube adhering to the sides of the stoma tract (Dougherty & Lister 2008) and allow tract to form</p> <p>To encourage wound healing (Dougherty & Lister 2008). The use of a dressing will depend on the child's skin condition and will require individual assessment of the child's needs</p> <p>To prevent infection and / or irritation to the skin</p> <p>Creams and talcum powder may interfere with the tube and skin integrity (Dougherty & Lister 2008)</p> <p>If the external fixation device is opened by an inexperienced person, it can cause damage to the tract if not done correctly and leakage of gastric contents into the peritoneum</p> <p>This may be due to localised swelling around the insertion site or to the child gaining weight</p> <p>This may be due to the child loosing weight</p> <p>The Y-Adaptor allows the feeding equipment to be attached. The universal adapter at the end of all feeding sets can be attached directly to this Y-Adapter, reducing the risk of the feeding set being accidentally disconnected.</p>

<p>Check the position of the PEG tube</p> <p>Ensure pH of the PEG Tube aspirate is checked:</p> <ul style="list-style-type: none"> prior to the PEG tube being first used (by nursing staff) after opening and closing the external fixation device if the PEG tube has been pulled accidentally <p>(pH must be between 0- 5.0 in the presence of acidic gastric secretions)</p> <p>Dispose of the equipment in the appropriate waste disposal</p> <p>Decontaminate hands</p> <p>Document all care given and the condition of stoma and surrounding area. Record and report any abnormalities.</p>	<p>To ensure the tube is positioned correctly in the stomach and not in the peritoneum which can result in serious or fatal complications(Howe et al. 2010, Trigg & Mohammed 2010)</p> <p>To prevent cross contamination (OLCHC 2010b, 2011c)</p> <p>To prevent cross infection (HSE 2009, OLCHC 2010a, 2011a, 2011c)</p> <p>To maintain an accurate recording of nursing care and ensure safe practice and to maintain accountability (An Bord Altranais 2002, NHO 2009)</p>
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3.0 Mic-Key button gastrostomy

Introduction:

The Mic-Key button gastrostomy is a skin level device made of silicone. Although, it is usually a second level gastrostomy (it can only be inserted once a tract has already been formed from a percutaneous endoscopic gastrostomy (PEG) or other gastrostomy), but can be inserted as first level gastrostomy (only in consultation with the consultant and Nutritional Support Nurses). The Mic-Key button is inserted into an existing gastric stoma and is held in place internally by a balloon, which is inflated with water.. It has an external low profile disc to maintain position. Routinely, the water in the Mic-key button is changed weekly and the Mic-key button is usually changed every 3-4 months.



3.1 Changing (the water in) a Mic-Key Button Gastrostomy

Nurses at ward/unit level, the Nutritional Support Nurse and caregivers may change (the water in) a Mic-Key button once he/she has received instruction , on how to perform this procedure, from the Nutrition Support Nurse Specialist (or other appropriate individual), thus ensuring that they work within the Code of Professional Conduct and Scope of Practice (An Bord Altranais 2000a; 2000b).

Equipment

- Correct size replacement button
- Non sterile gloves
- Gauze
- Water-based Lubricant gel (K-Y Gel)
- 5 ml syringes X 1
- 10ml syringe X 1
- Sterile water
- pH paper
- Extension Set

Care of a Mic-key Button

ACTION	RATIONALE & REFERENCE
Assess the child's condition and readiness prior to inserting the new correct size Mic-key button	To determine the child's readiness to perform the procedure
Explain procedure to child / parents / carers	To ensure child/ parents/ carers understand the procedure and gain their trust and co-operation (Trigg & Mohammed 2010)
Parents / carers can be taught to replace the Mic-key button, if	Involvement of parents assists in the promotion of their

<p>they wish.</p> <p>Decontaminate hands and put on gloves (and disposable apron if appropriate)</p> <p>Always use an extension set when accessing the Mic-key button</p> <p>Check Mic-key button is secure and not too tight by holding firmly and pulling slightly.</p> <p>Check the position of the Mic-key button:</p> <ul style="list-style-type: none"> Whenever balloon has been deflated and reinflated, i.e.: <ul style="list-style-type: none"> Changing the Mic-key button Changing the water in the balloon. Aspirate a small amount of stomach contents and test using a 20 ml enteral syringe and pH paper. (pH reading must be between 0-5 in the presence of acidic gastric secretions). <p>If there is no aspirate, do not use the Mic-key button.</p> <ul style="list-style-type: none"> Sit the child up and aspirate again, If the child is allowed oral fluids offer a drink and aspirate again, The Mic-key can be x-rayed or contrast studies performed to confirm its position, Do not use tube if unsure of its position. Contact Surgeon for advice regarding further use <p>Changing the water in the Mic-Key Button (weekly)</p> <ul style="list-style-type: none"> Check the position of the Mic-key button, as above Fill a 5ml syringe with 5mls of sterile water Attach an empty 10ml syringe to balloon port and withdraw all water from inside the balloon. Hold button in place Attach 5ml syringe containing 5ml of water to balloon port and insert fresh water into balloon. Do not insert air into balloon If the balloon will not deflate: <ul style="list-style-type: none"> clean balloon port with a cotton bud and water and try to deflate the balloon again. If the balloon does not deflate, contact the Nutritional Support Nurse / Surgeon Check the pH of the Mic-key button, as above <p>Cleansing</p> <ul style="list-style-type: none"> Clean the stoma and surrounding area with sterile water and cotton wool/ gauze. Perform a swab if the stoma and surrounding area displays signs and symptoms of infected Pat dry <p>Rotating</p> <p>Rotate the Mic-key button 360° degrees from Day 1 post operatively and daily thereafter</p>	<p>independence in caring for the child and the gastrostomy (Trigg & Mohammed 2010, Clynes & O' Connor 2010)</p> <p>To prevent cross infection (HSE 2009, OLCHC 2010a, 2011a, 2011c)</p> <p>To avoid damaging the valve in the extension set port of the Mic-key button and to ensure the child is fed correctly</p> <p>The button should feel snug on the child's abdomen but not tight enough to leave a mark on the child's skin. There should be 3mm between the child's abdomen and bottom of external base (Johnson 2007)</p> <p>To ensure the Mic-key button is in the correct position (Trigg & Mohammed 2010, Bunford, 2010)</p> <p>Do not use the Mic-key button until it has been established that it is in the correct position (Trigg & Mohammed 2010, Dougherty & Lister 2008, Glasper et al. 2009) <i>do they say each time or as a once only check?</i></p> <p>Document that position has been conformed</p> <p>The Mic-Key button has a radiopaque stripe on the tube. (Do not use contrast inside the balloon)</p> <p>To ensure the Mic-key button is in the correct position To have filled syringe ready for use To ensure all water has been removed from Balloon</p> <p>To ensure button is not dislodged while balloon is empty To ensure correct amount of water is in the balloon</p> <p>Air will rapidly migrate out of the balloon and the button may become dislodged.</p> <p>Food, skin cells, creams and powder can become lodged in the valve recess. The valve recess must be clean in order to function properly (Medical Innovations Corporation 1999)</p> <p>To ensure the Mic-key button is in the correct position (Trigg & Mohammed 2010, Bunford, 2010)</p> <p>To prevent infection and excoriation from leakage during the procedure (Trigg & Mohammed 2010)</p> <p>To remove any excess moisture as a dry medium is not conducive to the growth of micro-organisms As per Guidelines for performing a wound swab (OLCHC 2008) To remove any excess cleaning fluid and create a dry medium that is less conducive for microbial contamination</p> <p>To allow the stomach to adhere to the abdominal wall and to ensure that Mic-key button does not become embedded in the stomach wall causing 'buried bumper syndrome'. Buried bumper syndrome occurs when the internal bumper is pulled up against the gastric mucosa with too much force. Over time, the bumper erodes into the mucosa, which then grows over it, until the bumper becomes either partially or completely buried. It is more</p>
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<p>Dressing Apply a dressing (if required)</p> <p>Dispose of the equipment in the appropriate waste disposal.</p> <p>Decontaminate hands</p> <p>Document date and time of:</p> <ul style="list-style-type: none"> • All care given • Condition of the stoma and surrounding areas • Amount of water in the retention balloon • Record and report any abnormalities. 	<p>common with gastrostomy tubes that have a silicon internal retention disc (Westaby et al 2010)</p> <p>To prevent cross contamination (OLCHC 2010b,2011c)</p> <p>To prevent cross infection (HSE 2009, OLCHC 2010a, 2011a, 2011b)</p> <p>To facilitate communication, to provide evidence of delivery of quality care, to ensure evaluation of this care, to maintain an accurate recording of nursing care and to ensure safe practice and maintain accountability (<i>An Bord Altranais 2002, NHO 2009</i>)</p>
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4.0 Feeding via a Percutaneous Endoscopic Gastrostomy tube / Mic-key button Gastrostomy

Introduction:

Gastrostomy tube feeding is considered a suitable method for long term enteral feeding. This type of feeding has an advantage over nasogastric tube feeding as gastrostomy tubes do not cause irritation to the nasal mucosa, the facial skin, or the oesophagus, reducing the incidence of feed aspiration of feed into the trachea and lungs.

Complications associated with enteral tube feeding can be related to (this is not an exhaustive list):

The type and frequency of complication related to tube feeding depends on the access route, underlying disease status, the feeding regimen and the patient's metabolism (Payne-James 2001). Dougherty and Lister (2008) also identified

- Aspiration
- Nausea and vomiting
- Diarrhoea
- Constipation
- Abdominal distension
- Blocked tube

Equipment:

Infant formula / expressed breast milk / child's feed

Sterile water (for flushing pre and post feeds)

20 ml Enteral syringe (for checking aspirate if tube being used for the first time)

Extension set (if Mic-key button gastrostomy)

Enteral feeding pump with fully charged battery and lead to connect it to the mains electrical supply

Disposable gloves

FOR BOLUS FEED

Bolus feeding set (kangaroo feeding set)

FOR CONTINUOUS FEED

Enteral feeding administration set (purple)

ACTION	RATIONALE & REFERENCE
Explain procedure to child / parents / carers	To ensure child/ parents/carers understand the procedure and gain their trust and co-operation (Trigg & Mohammed, 2010)
Gather all equipment prior to procedure	To prepare environment (Trigg & Mohammed 2010)
Ensure the child has a dietician's order sheet and that it is up to date	To ensure correct feed is administered in adherence with the Analysis Sheet from the Electronic Dietetic Manager Computer Programme used within OLCHC
Decontaminate hands and put on gloves and disposable plastic apron if appropriate.	To prevent bacterial contamination of feed (HSE 2009, OLCHC 2010a, 2011a, 2011b)
Position the child comfortably, with their head above the level of the stomach, at an angle of approximately 30 degrees.	To reduce the risk of regurgitation and prevent aspiration (Trigg & Mohammed 2010)
Draw up 10mls of sterile water into a 10ml syringe for flushing the gastrostomy tube	Using a larger syringe exerts less pressure on the tube (Bard Access Systems 1994). Sterile water should be used for immunocompromised patients and infants under the age of 1 year (NICE 2003)
Checking the position of the:- PEG tube:	To ensure the tube is positioned correctly in the stomach and not in the peritoneum which can result in serious or fatal complications

<ul style="list-style-type: none"> • prior to the PEG Tube being used following its insertion • after opening or closing the external fixation device • If uncertain of the PEG tube position, e.g. partially dislodged / accidentally pulled: <p>Mic-key button:</p> <ul style="list-style-type: none"> • Whenever balloon has been deflated and reinflated, i.e.: <ul style="list-style-type: none"> • Changing the Mic-key button • Changing the water in the balloon. ○ By aspirating a small amount of stomach contents with a 20 ml enteral syringe ○ Apply aspirate on a pH paper (pH reading must be between 0-5.0 in the presence of acidic gastric secretions) <p>Attach the extension set and flush the tube prior to commencing the feed with 10mls of sterile water using a 10ml syringe.</p> <p>Prepare the feed Ensure it is the correct volume and type of feed for the correct patient</p> <p>CONTINUOUS FEED:</p> <ul style="list-style-type: none"> • Insert the feeding set into the feeding pump • Press 'Fill Set' button on the feeding set • Connect feeding set to the appropriate feeding port on the gastrostomy tube • Start pump at prescribed rate • Unclamp gastrostomy clamp • Unclamp giving set. <p>BOLUS FEED (using a bolus feeding set):</p> <ul style="list-style-type: none"> • Prime the set and expel any air. • Connect feeding set to the appropriate feeding port on the gastrostomy tube • Holding the set above the level of the child's stomach • Unclamp gastrostomy clamp and • Adjust the roller clamp on the feeding set to set the rate for administration of the feed <p>Allow feed to be administered over 15 –30 minutes, as this is the same length of time it would normally take a child to feed orally (or at a rate that is indicated by the child's ability to tolerate the feed)</p> <p>While the feed is being administered allow:</p> <ul style="list-style-type: none"> • The infant to suck a soother • The child can play with feeding utensils / feed at the dinner table <p>The flow is determined by gravity. Do not use plunger of syringe to administer feed.. If feed is too thick for gravity, administer via a feeding pump.</p> <p>Top up barrel of syringe / feeding set as it begins to empty</p> <p>Continue this procedure until the full feed is administered</p> <p>Observe child during the feed for:</p> <ul style="list-style-type: none"> • Signs of discomfort e.g. heaving or retching. • Signs of breathing difficulties and / or colour changes while administering the feed. <p>When feed is complete:</p> <ul style="list-style-type: none"> • Clamp child's gastrostomy before removing feeding set/ syringe 	<p>(Trigg & Mohammed 2010)</p> <p>To prevent blockage of tube (Payne-James 2001, NICE 2003). Sterile water should be used for immunocompromised patients and infants under the age of 1 year (NICE 2003)</p> <p>To prevent any errors occurring (Trigg and Mohammed 2010)</p> <p>In adherence with the Guidelines on hang times for Enteral Feeding (OLCHC 2011c) To ensure the child is not given any excess air in the feed which may cause abdominal discomfort. To ensure the child receives the prescribed amount of feed (Trigg & Mohammed 2010)</p> <p>To ensure the child is not given any excess air</p> <p>Administering a feed too quickly can cause nausea, vomiting or oesophageal reflux (Trigg & Mohammed 2010)</p> <p>In order for the infant to associate sucking with feeding (Trigg & Mohammed 2010) In order to facilitate the normal socialisation associated with feeding (Trigg & Mohammed 2010)</p> <p>Using a plunger can cause excess force and cause the child to vomit (Trigg & Mohammed 2010)</p> <p>To prevent instilling air into the tube leading to abdominal discomfort and wind (Trigg & Mohammed 2010)</p> <p>To ensure the child maintains their hydration and nutritional status</p> <p>To monitor child for any signs of discomfort and assess their tolerance for the feed. If signs of discomfort are present slow down or stop feed (Trigg & Mohammed 2010)</p> <p>To prevent air getting in to child's tube (Trigg & Mohammed 2010)</p> <p>Using a larger syringe exerts less pressure on the tube (Bard Access Systems 1994)</p>
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<ul style="list-style-type: none"> • Draw up 10mls of sterile water into a 10ml syringe for flushing the gastrostomy tube • Flush tube with 10mls of sterile water using a 10ml syringe. If tube is not clear of feed following flushing use a further 10mls of sterile water. <p>Care of the Extension Set (for Mic-key button)</p> <ul style="list-style-type: none"> • Clean with warm water and a detergent after each use • Disinfect the outside and inside of the extension set at ward / unit level after each use for children under 1 year or immunocompromised patients) • Allow to air dry • Place the extension set in a storage container at the child's bed space. • Change extension set weekly or more often if it needs to be. <p>Ensure the child is comfortable</p> <p>Dispose of equipment. Dispose of feed bag and tubing in appropriate waste disposal and syringes into sharps bin.</p> <p>Decontaminate hands</p> <p>Document date, time and type of feed given.</p>	<p>To prevent blockage of tube (Payne-James 2001, NICE 2003)</p> <p>As per Policy on Cleaning and Disinfection (OLHSC 2006a)</p> <p>To facilitate the access to the extension set for the next feed As per manufactures advice</p> <p>All care is delivered in a manner which preserves the child's dignity and maintains privacy (Glasper et al 2007)</p> <p>To prevent cross contamination (HSE 2009, OLC HC 2010b, 2011c,)</p> <p>To prevent cross infection (HSE 2009, OLC HC 2010a, 2011a, 2011b)</p> <p>To ensure safe practice and maintain accountability (An Bord Altranais 2002, NHO 2009).</p>
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5.0 Medication Advice for a PEG tube & Mic-key button Gastrostomy

The **Ward/Unit Pharmacist** must review the child's medication prescription and provide advice regarding the suitable medication for the gastrostomy tube. To ensure that the route of medication is prescribed and administered correctly as per OLC HC medication guideline (2006b) and the following should be taken into consideration:

- If the child can take anything by mouth:
 - Administer these medications ORALLY.
- If the child is nil by mouth:
 - Administer the medication via the PEG tube / Mic-key button gastrostomy:
 - Apply the principles for accessing the PEG tube / Mic-key button gastrostomy as per section 3.0
 - Ensure the PEG tube / Mic-key button Gastrostomy is flushed pre and post the administration of medications (NICE 2003) with at least 10mls of sterile water and dilute medication in a minimum of 10mls of appropriate solution using a 10ml syringe (where indicated). This may help to prevent the PEG tube / Mic-key button gastrostomy becoming blocked.

Medications to be aware of with gastrostomy tubes	Reason
Omeprazole (Losec)	can block tube
Lansoprazole (Zoton)	can block tube
Pancrelipase (Creon)	can block tube
Clarithromycin (Klacid)	can block tube completely

6.0 General Discharge Advice for a PEG tube & Mic-key button Gastrostomy

Please refer to the following advice leaflets for further details:-

- Advice for Parents / Guardians caring for an Infant / child with a COR-FLO Percutaneous Endoscopic Gastrostomy (PEG) Tube
- Advice for Parents / Guardians caring for an infant / child with a Mic-Key Button

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	<i>Signature:</i>
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