

14.7 Management of PEG (Percutaneous Endoscopic Gastrostomy)

A PEG allows nutrition, fluids and/or medications to be put directly into the stomach, bypassing the mouth and esophagus.

Specialized liquid nutrition, as well as fluids, are given through the PEG tube.

Possible complications of a PEG include pain at the PEG site, leakage of stomach contents around the tube site, and dislodgment or malfunction of the tube.

Other possible complications include infection of the PEG site, aspiration (inhalation of gastric contents into the lungs), bleeding and perforation.

Many ICAH clients are dependent on a PEG for medication and nutrition.

Management

Flushing

The purpose of flushing is to check for tube patency and prevent clogging of the PEG tube.

The PEG tube should be flushed regularly with water:

- Prior to and after feeding
- Prior to, in-between and after medications
- Regularly in between tube use

Prepare a compatible syringe, enteral tube connector and water for a flush.

- Tap water is suitable for most clients with a PEG.
- Boiled/sterile water may be necessary for children under 6 months of age or as clinically indicated e.g. immunocompromised patients

Flushing

- Enteral tubes should be flushed with between 5 – 20mls of water depending on the viscosity of the feed/medication, the client's fluid status balance and the client's size (The minimum volume required to clear the tube is 2mls).

Venting

- Feeding tubes may be used to facilitate venting or decompression of the stomach from the accumulation of air during such interventions as High Flow Nasal Prongs, Non-Invasive or Invasive Ventilation.
- Enteral feeding or administration of medication may proceed in this case dependent on the individual client's condition
- The tube may be clamped for 30 minutes to an hour post administration to prevent loss of feed or medication
- Continuous venting may be facilitated following administration by securing the distal end of the tube above the head of the client. This may be attached to the end of a 5 or 10mL enteral/oral syringe with the plunger removed to create a reservoir should gastric contents reflux
- **Feeds**
- Feeds can be administered via syringe, gravity feeding set or feeding pump. The method selected is dependent of the nature of the feed and clinical status of the client. There is limited evidence available to support one method of feeding over the other.

- For clients who have enteral feeding regimes at home:
- Speak with the family and client (if appropriate) to establish normal feeding
- Ensure the medical team/dietitian have ordered the client's home feeding regime

Do not administer feeds through enteral tubes that are being used for aspiration or are on free drainage.

Administration of Feeds

Prior to and after feeds the enteral tube should be adequately flushed.

Position:

- Lying prone/supine during feeding increases the risk of aspiration and therefore where clinically possible the client should be placed in an upright position.
- If unable to sit up for a bolus feed or if receiving continuous feeding, the head of the bed should be elevated 30-45 degrees during feeding and for at least 30 minutes after the feed to reduce the risk of aspiration.

Using a syringe for a bolus feed

- Remove the plunger from the syringe and place the tip of the syringe into the enteral tube connector at end of the enteral tube.
- Holding the syringe and enteral tube straight, pour the prescribed amount of feed into the syringe. Let it flow slowly through the tube e.g. 250ml over 20 minutes.
- Pour the prescribed amount of water into the syringe and allow to flow through to flush the feeding tube appropriately.

Using gravity feeding for bolus, intermittent feeds and continuous feeds.

- Using a gravity feeding set with the roller clamp closed, attach the set to the feeding container with the correct prescribed amount of feed and hang the container on the pole.
- Squeeze the drip chamber until it is one third full of the feeding solution.
- Remove the protective cap from the end of the giving set and open the roller clamp, allowing the feed to run down to the end of the giving set (to prime the line), then close the roller clamp.
- Connect the giving set to the enteral tube connector at the end of the enteral tube.
- Open the roller clamp and set the flow rate by counting the drops per minute. As a guide, 20 drops of standard feed is approximately 1ml. Use the following equation or the table below to calculate the drip rate: $(\text{ml/hour}) / 3 = \text{drops/minute}$
- Open and close the roller clamp until the desired drip rate is set correctly. Check the drip rate regularly to ensure the feed is still running at the required rate.

Using an enteral feeding pump for bolus or intermittent enteral feeding

An enteral feeding pump can be used intermittent, bolus or continuous administration of feeds, but is best suited for continuous feeding when tolerance to rate of feeding is an issue.

ICAH clients are generally referred by Royal Children's Hospital and Infinity pumps are now in use throughout RCH.

It is most likely the client will have an Infinity pump so that the giving set can be primed by pushing the fill set button. For further information regarding the use of the infinity pump please refer to the [manufacture's instructions](#).

Temperature of the feed

Bolus feeds

For older children feeds given as a bolus should be administered at room temperature.

Feeds given as a bolus may be warmed in an approved bottle warmer. This would be appropriate for clients who experience discomfort with cooler feeds.

Continuous feeds

Continuous feeds should **NOT** be warmed. They may be removed from the fridge 15-20 minutes prior to administration to bring it to room temperature and should not hung for longer than 4 hours – use the dose limit function on the feed pump to ensure this occurs.

Please Note: Feeds should NOT be warmed in a microwave or in jugs of boiling water.

Completion of feed

The tube must be flushed with water to prevent tube from blocking.

Giving sets:

- Rinsed out with warm water (tap or sterile).
- Ensure tip of giving set is covered between uses.
- Only prime the giving set with formula immediately prior to feeding time.
- The set should be changed every 24 hours or as per manufacture instructions.

Medication administration

- Confirm that the enteral feeding tube is the intended route for a medication before administration.
- Confirm the position of the enteral tube prior to medication administration

- Adequately flush the enteral tube before, in-between and after medication administration (see above).

Choice of drug preparation

Consult the client's pharmacist or call RCH Medicines Information (ext: 55208) for advice on how to prepare a drug for enteral administration.

- Liquid formulations are usually preferred for enteral tube administration, unless the formulation contains other ingredients that could cause unwanted side-effects (e.g. sorbitol can cause diarrhoea). Liquid formulations may be inappropriate in some clients (e.g. the carbohydrate content may be too high for patients on a ketogenic diet).
- Viscous liquid medications may require dilution to prevent clogging of the enteral tube.
- If a liquid formulation is not available consult a pharmacist to confirm if the tablet form can be crushed to a fine powder and then dispersed in water, or whether a capsule can be opened to disperse the contents in water.
- Do not mix medications with feeds.
- Do not crush enteric coated or sustained/controlled release medications.

Unblocking tubes

Blocking of tubes can occur due to:

- Interaction between gastric acid, formula and medications
- Interactions between medications if tube is not flushed between medications
- Inappropriately prepared medications e.g. inadequately crushed tablets
- Small internal diameter of the tubes and longer tubes
- Binding of medication to the tube

- Viscosity of some liquid preparation
- Poor flushing technique
- Bacterial colonization of the nasogastric tube

Flushing is the single most effective action that prolongs the life of enteral tubes. It is recommended that flushing occur **BEFORE, DURING** and **AFTER** administration of enteral medications and feeds.

To unblock enteral tubes, flush the tube in a pulsating manner (push/pull) with 10-20ml with warm water, if it is safe to do so taking into account the client's age, size and clinical status. It may be appropriate to allow the warm water to soak, by clamping/capping the tube, in the tube to assist with unblocking.

Please note there is no evidence to support the practice of using carbonated drinks such as Coca Cola™ to unblock enteral tubes.

Feed Intolerance

- The client should be monitored and observed to assess if the patient is tolerating enteral feeds.
- Signs the client is not tolerating feeds include:
 - nausea
 - vomiting
 - abdominal distension/pain
 - constipation
 - diarrhoea

Consider titrating feeds down or ceasing feeds for a short period of time depending on the clinical status and nutritional needs of the client.

When titrating a feed down, document why the feed was titrated down, notify dietician and/or medical team/Complex Care Team to inform them that the client is not tolerating feeds and make a plan to ensure the client is still receiving adequate nutrition and hydration.

Tubes falling out

- With tube dislodgment or accidental removal consider ongoing nutritional needs and clinical status of the client and in consultation with parents, medical team and/or dietician decide when & how the tube should be replaced.
- Dislodgement of a Gastrostomy tube - Stop the feed/medication administration immediately. Contact the medical team and/or Complex Care to review. Keep the tube in place by taping it to the skin until a plan for re-insertion can be made.
- Accidental removal of a Gastrostomy tube – tube needs to be reinserted as soon as possible to prevent stoma closure. Gastrostomy tubes should be reinserted and taped into position if the balloon has burst. If the tube cannot be reinserted consider using a foley catheter to keep stoma patent until an appropriate tube can be found. Contact the medical team and/or Complex Care to review.

Check the PEG tube daily.

Check the length of the tube from the end to where it goes into the stomach. If it gets longer, it may be at risk for coming out. If it gets shorter, notify the medical team/Complex Care.

Check the bumper (piece that goes around the tube, next to the skin). It should be snug against the skin.

Routine skin care:

Clean the skin around the tube daily with saline soaked gauze or in the shower. Check for redness and swelling around the insertion site. Check for fluid draining from the stoma. Keep the skin around the PEG tube dry to help prevent skin irritation and infection.

This guideline is an adaptation of that recommended by the Royal Children's Hospital Melbourne Victoria.

The whole document was coordinated by Mercy Thomas, Nursing Educator, and approved by the Nursing Clinical Effectiveness Committee and available on RCH website.

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