SECTION 12.2 ENTERAL FEEDING

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Introduction
Enental tube feeding describes methods of providing artificial nutrition via the gastrointestinal tract. This has become an increasingly common method of nutritional support within the long-term, community and home care setting.
Feed can be delivered via a nasoenteric tube or enteroostomy tube. This guideline is specific to prevention and control of infection in enteral feeding via a gastrostomy or jejunostomy tubes.

Risk of Infection

There is an increased risk of infection for residents/clients who are
• Fed by a route that bypasses the stomach e.g. Jejunostomy and gastrojejunostomy
or
• Prescribed gastric acid reducing therapy e.g proton pump inhibitors or
• Immunocompromised e.g. prescribed immunosuppressants, cytotoxics or long courses of corticosteroids or
• Immunocompromised due to disease or major injuries or organ transplant.

The nutrients that these feeds contain along with the fact that feeds are administered at room temperature can make them an excellent environment for rapid microbial growth. Bacteria can gain access to the feed during preparation and mixing of ingredients, the dilution and /or decanting of feeds and the subsequent assembly of the feed. Contaminated feeds and systems can cause diarrhoea and can also lead to more serious infections including pneumonia and septicaemia (Bliss et al 1998, Bert et al 1998).

Research indicates that up to 30% of PEG sites can be complicated by peristomal infection, 70% of which are minor and a minority 1.6% requiring aggressive treatment including surgery. Severe complication of peritonitis can occur following PEG site infection (Lynch & Fang 2004).

Studies have also shown that people receiving enteral feeding can be a source of infection as gastrointestinal organisms from the enteral tube hub can colonise the external surfaces of the administration set (Matlow et al, 2003). The administration set may then act as a reservoir of organisms that may be carried on the hands of the healthcare worker to another client if there is non-compliance with hand hygiene. Hence,

It is necessary to follow guidelines to reduce the risk of contamination of the feed and enteral feeding system.
(National Clinical Guidelines Centre (NICE) 2012)

Measures to Reduce the Risk of Infection
The following measures are necessary to reduce the risk of infection and need to be adapted and incorporated into local practice guidelines
**Hand Hygiene**
Hand hygiene should be carried out as per the WHO Moments for Hand hygiene and is critical prior to preparing and administering feeds, administering medication and after any subsequent handling of the system or the site.

Carry out hand hygiene:
- Using an alcohol handrub if hands are visibly clean or
- Using plain liquid soap.

Where antiseptic hand hygiene is required use
- an antiseptic agent or
- an alcohol handrub for a minimum of 30secs if hands are visibly clean.

**Personal Protective Equipment**
As per Standard Precautions, single use disposable gloves should be worn if it is anticipated that there will be a risk of contamination of hands with gastric fluids or contact with non-intact skin e.g. connecting administration set to enteral tube hub or contact with the gastrostomy site.

**Selection of Equipment**
The design of the system is important in order to minimise handling.
- Do not decant feeds unless no other feeding system is available. Pre-packaged, ready-to-hang feeds should be used in preference to feeds requiring decanting, reconstitution or dilution.
- The system selected should require minimal handling to assemble and be compatible with the resident/clients’ enteral feeding tube.
- Syringes used in connection with enteral feeding systems must be designated by the manufacturers for that purpose. (National Patient Safety Agency, 2007)
- For use of reusable syringes in residential and long-term care setting please refer to appendix 12.1.1 for residential and day care settings and appendix 12.1.2 for home setting

**Storage of Feeds**
- Feeds should be stored in a clean environment protected from extremes of temperature according to manufacturers instructions and where applicable according to food hygiene legislation.
- Where ready to use feeds are not available, feeds may be prepared in advance stored in a refrigerator, at a temperature not exceeding 4°Celsius and used with in 24hrs. Feeds should be labeled with time, date and name.
- The refrigerator should be checked daily and cleaned regularly. Any unlabeled feeds or out of date feeds must be discarded.

**Assembly of Feeds**
- Hand hygiene must be carried out before assembling a feed.
- A clean work area must be used to prepare feed and equipment.
- Check expiry date of feed. Do not use equipment that has been damaged or opened.
• Ready-to-use feeds should be used in preference to decanting or diluting feeds. If decanting is necessary a clean area should be used to prepare the feed. Equipment dedicated for enteral feeding should be used.
• Ensure the top of the container is clean and dry prior to decanting.

Administration of Feed

• Minimal handling and no-touch technique should be used when connecting the administration set to the enteral tube. Avoid touching inner aspects of the feeding system.
• Sterile, ready-to-use feeds can be hung for a maximum of 24 hours, provided a no-touch technique has been used to set up the feed. This includes a four-hour break from feeding.
• It is recommended that sterile feeds decanted in sterile reservoirs should not hang for longer than 8–12 hours. Do not top up reservoirs.
• Non-sterile feeds i.e. reconstituted or diluted feeds should be administered over a maximum of 4 hours.
• Administration set is a single use item and should not be used for more than 24 hours and should be discarded after each feeding session.
• Avoid frequently disconnecting the giving set from the feeding tube as this will increase the risk of infection.
• When disconnecting is necessary
  o Carrying out hand hygiene.
  o Avoid touching the inner aspects of the connections.
  o If the administration set is to be disconnected for any reason the set should be capped with a clean/sterile cap. Avoid touching the end of the set or touching it against clothing.
  o Do not remove the feed from the stand – it is important to keep the giving set lower than the feed container to avoid reflux from the giving set.
• In residential settings sterile water or cooled boiled should be used for flushing of all tubes. The choice will depend on the risk of infection for the resident.
  o For residents at increased risk of infection (as previously outlined) use sterile water in ready to hang containers or bottled sterile water.
  o Bottles once opened should be labelled with the time and date of opening and discarded after 24hrs. A sterile syringe should be used each time the bottle is accessed.
  o Cooled boiled water should be freshly drawn tap water from the drinking supply. After boiling the water should be stored in a clean covered container in the fridge and discarded after 24hrs.

Care of Insertion Site

• An aseptic non-touch technique is used for the first 72hrs using sterile normal saline to clean if required. (CREST 2004 & INDI 2007)
• After 72hrs a clean technique using sterile equipment e.g. dressing pack should be used until tract has healed (may be up to 3 weeks), in order to reduce the risk of infection and promote a healthy stoma.
• If the gastrostomy site is oozing a loose, thin, absorbent keyhole dressing may be used to cover the site until the stoma has healed. The aim is to keep the skin and fixation device clean and dry.

For healed insertion sites:
• Inspect the site daily for signs of infection
• Keep the site clean by using a mild soap and dry using a disposable cloth/clean towel
• Avoid the use of dressings.
• Skin irritation can be managed by washing the area frequently with warm water and drying thoroughly.
• Baths should not be used until the tract is healed (may be up to 3 weeks) – showers can be taken.

**Prevention and Identification of Infection and Appropriate Action**
It is important for staff to be alert to the signs of infection associated with enteral feeding. Early recognition is important to permit early treatment.
• Local infection at the stoma site can occur indicated by redness, swelling, pain, discharge and ulceration of the skin.
• Bowel infections may present with nausea, abdominal pain, vomiting and/or diarrhoea. (Where infectious gastroenteritis is suspected please refer to Section 10.0 Guidelines on the General Management of Gastroenteritis.)
• Systemic infection may present as fever, lethargy or altered consciousness.

**Management of PEG Site Infection**
If signs and symptoms of infection at the site are present
• Take a swab for culture and sensitivity - results should be interpreted with clinical signs and symptoms of infection.
• Clean the site twice daily (minimum) – an absorbent dressing maybe appropriate when there is an exudate.
• Topical antibiotic cream to be avoided.

In addition to the treatment of infection it important to try and identify why the infection occurred. Ensure guidelines are being adhered to and that all members of staff involved in managing the enteral feeding system are aware of guidelines and have received appropriate education.

**Infections Associated with Enteral Feeding:**
• Chest infections can be caused by aspiration of feed into the airway. Positioning of the residents head and shoulders at an angle of at least 30 -45 degrees during feeding and for at least 60mins after feeding will assist in prevention.
• Many tube fed residents are at risk of developing poor oral health which can lead to aspiration pneumonia. Each resident’s oral health should be assessed and an appropriate oral care protocol should be used for every resident.

**Storage of Enteral Feeding Equipment**
In a healthcare setting enteral feeding equipment (giving sets, syringes) should be managed as sterile goods
- Stored in a clean, dry storage area, and off the floor
- Preferably in closed presses in order to minimize dust collection
- Stock rotation should be in place

In a home setting enteral feeding equipment should be stored in a clean dry press.

**Decontamination of Enteral Feeding Equipment**

Equipment which is single use must be discarded after use.
Equipment which is single patient use must be reprocessed and stored according to manufacturers instructions
(See Medical Device Agencies Signs and Symbols for explanations of symbols on packaging included in Section 8 Decontamination.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>Thoroughly wash in detergent and warm water. Rinse and dry. Store in a clean container with lid. Follow manufacturers instructions</td>
</tr>
<tr>
<td>Single patient use</td>
<td></td>
</tr>
<tr>
<td>Extension sets</td>
<td>a) Thoroughly wash in detergent and warm water. Rinse and dry. Store in a clean container with a lid. Follow manufacturers instructions</td>
</tr>
<tr>
<td>a) Single client use</td>
<td></td>
</tr>
<tr>
<td>b) Single use</td>
<td>b) Discard after use</td>
</tr>
<tr>
<td>Giving sets</td>
<td>Single use item discard at end of feeding session.</td>
</tr>
<tr>
<td>Pumps</td>
<td>Wipe over with a damp cloth or detergent wipe to keep dust free. Clean any spillages immediately.</td>
</tr>
<tr>
<td>Syringes</td>
<td>a) Reusable enteral feeding syringes (purple) are single client use Reprocess and change according to manufacturer's instructions. See Appendices</td>
</tr>
<tr>
<td>a) Reusable</td>
<td></td>
</tr>
<tr>
<td>b) Single use</td>
<td>b) Syringes, which are designated for single use, should be discarded after each use.</td>
</tr>
</tbody>
</table>

For specific information on your client’s enteral feeding regime, contact the dietitian in the hospital where the enteral feeding commenced.

For information on Enteral Feeding see Contact
Community Nutrition & Dietetic Service,
Health Promotion Department,
HSE- South (Cork & Kerry)
Cork: 021 4921641  Kerry: 064 70763
**References & Bibliography**


Appendix 12.2.1

Management of Enteral Syringes in Residential & Day Care Settings

Sterile single use syringes are recommended for the following groups of clients who are at increased risk of infection

• Fed by a route that bypasses the stomach e.g. Jejunostomy and gastrojejunostomy
• Prescribed gastric acid reducing therapy e.g. proton pump inhibitors
• Immunocompromised e.g. prescribed immunosuppressants, cytotoxics or long courses of corticosteroids
• Immunocompromised due to disease or major injuries or organ transplant

Syringes designated, as single use items must be disposed of after use.

Single use only is denoted by this symbol on packaging. Medical Device Agency (MD DB 2000(04))

Reusable enteral feeding syringes are:

• Suitable for use with residents who are not at increased risk of infection as previously outlined.
• Designated for ‘single patient use’ and must be cleaned and reused according to manufacturers instructions.

Reusable enteral feeding syringes should be reprocessed as per manufacturer’s instructions. If manually washing syringes, a designated sink for cleaning of equipment i.e. not a handwashing sink is necessary:

• Clean immediately after each use/administration.
  • Use fresh warm soapy water (domestic washing-up liquid). It is essential to draw plunger in and out several times until all traces of feed/medicine are removed.
  • Separate barrel and plunger and wash thoroughly in warm soapy water.
  • Rinse under cold tap water and shake off excess water
  • Wipe dry with clean paper towel.
• Store in a clean covered container.
• Reassemble when required.

After each cleaning cycle the following actions must be carried out

• Visual inspection for cracks and damage.
• Ensure graduation marks are visible.
• Ensure there are no leaks.
Replace if
  • There is visible damage to the barrel or tip.
  • Dose markers are no longer clear.
  • The plunger seal is damaged.
  • The dispenser becomes difficult to operate.

Manufacturers of BAXA Enteral Dispensers advised that reusable enteral syringes will withstand 30 cleaning cycles (less in domestic dishwasher).
Appendix 12.2.2

Management of Enteral Syringes in Family Home

**Sterile single use syringes** are recommended for the following groups who are at increased risk of infection:

- Fed by a route that bypasses the stomach e.g. Jejunostomy and gastrojejunostomy
- Prescribed gastric acid reducing therapy e.g. proton pump inhibitors
- Immunocompromised e.g. prescribed immunosuppressants, cytotoxics or long courses of corticosteroids
- Immunocompromised due to disease or major injuries or organ transplant

Syringes designated, as **single use items** must be disposed of after use.

Single use only is denoted by this symbol on packaging. Medical Device Agency (MD DB 2000(04))

**Reusable enteral feeding syringes are:**

- Suitable for use with clients who are not at increased risk of infection as previously outlined.
- Designated for ‘single patient use’ and must be cleaned and reused according to manufacturers instructions.

Reusable enteral feeding syringes should be reprocessed as per manufacturer’s instructions e.g. in the dishwasher. If manually washing enteral feeding syringes, the following is necessary:

- Wash at clean kitchen sink or in a designated container for washing syringes (e.g. a plastic lidded box which could also be used for storage of clean, dry syringes).
- Clean immediately after each use/administration.
  - Use fresh warm soapy water (domestic washing-up liquid). It is essential to draw plunger in and out several times until all traces of feed/medicine are removed.
  - Separate barrel and plunger and wash thoroughly in warm soapy water.
  - Rinse under cold tap water and shake off excess water
  - Wipe dry with clean paper towel.
- Store syringe and plunger un assembled in a clean covered container.
- Reassemble when required.

After each cleaning cycle the following actions must be carried out

- Visual inspection for cracks and damage.
- Ensure graduation marks are visible.
- Ensure there are no leaks.

Replace if

- There is visible damage to the barrel or tip.
- Dose markers are no longer clear.
- The plunger seal is damaged.
- The dispenser becomes difficult to operate.

Manufacturers of BAXA Enteral Dispensers advised that reusable enteral syringes will withstand 30 cleaning cycles (less in domestic dishwasher).
Appendix 12.2.3 Risk Assessment of Client’s Susceptibility to Infection (Home Enteral Feeding)

Part A
Is the client receiving enteral feeding at increased risk of infection because they are:
- Fed by a route that bypasses the stomach e.g. Jejunostomy and gastrojejunostomy or
- Prescribed gastric acid reducing therapy e.g. proton pump inhibitors or
- Immunocompromised e.g. prescribed immunosuppressants, cytotoxics or long courses of corticosteroids or
- Immunocompromised due to disease, major injuries, burns or organ transplant.

Yes

For persons at increased risk of infection
- Single-use enteral syringe to be used each time the tube is flushed or medication given.
- Sterile water to be used for flushing and any additional water required.
- Bottles once opened should be discarded after 24hrs.
- Use a designated clean surface /tray for preparation of enteral feeds.

No

Part B
In the home is the kitchen environment maintained in a hygienic condition?

Yes
- A reusable enteral syringe can be used
- Reusable enteral syringes should be cleaned after each use and replaced as per manufacturer’s instructions. (See appendix)
- Use cooled boiled water or tap water for flushing.
- Use a designated clean surface /tray for preparation of enteral feeds.

No
- Consider the use of a sterile syringe each time the tube is flushed, or medication given.
- Use sterile water for flushing.
- Bottles once opened should be discarded after 24hrs.
- Use a designated clean surface /tray for preparation of enteral feeds.

Part C
Is the clients’ feeding system being managed by the family or healthcare worker?

Family
- Handwashing with soap and water is essential prior to assembling, handling or manipulating the feeding system.
- Gloves are not required by the family for administration of enteral feeds.

Healthcare worker
- Hand Hygiene using an alcohol hand rub on visibly clean hands or using soap and water, is essential prior to assembling, handling or manipulating the feeding system.
- HCW must wear appropriate PPE as per Standard Precautions i.e. non-sterile disposable gloves when dealing with body fluids and when manipulating the feeding tube/system, aprons if splashing is likely.

Adapted from CREST – Guidelines for the Management of Enteral Tube Feeding in Adults 2004