PAEDIATRIC ENTERAL FEEDING GUIDELINES & OPERATIONAL POLICY (Infants & Children)

These guidelines are for health care professionals and should be used in conjunction with the Scottish Best Practice Guidelines, which have been adopted by Dartford & Gravesham NHS Trust and Dartford, Gravesham & Swanley Primary Care Trust

Date: January 2007
Ref: MA046
Vers: 1

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INTRODUCTION
These enteral feeding guidelines are intended to provide information to all healthcare professionals involved in paediatric enteral feeding, both in the hospital and community setting. They should be used in conjunction with the Scottish Best Practice Statement for Nasogastric and Gastrostomy Tube Feeding (1).

They will help to ensure a smooth transition from hospital to the home setting for children, to clarify the roles of all professionals involved in their care and to promote regular monitoring of these patients.

There has been a steady rise in paediatric Home Enteral Tube Feeding (HETF) across the UK in the last 3 years (21.6% rise from 2000 to 2003). This is not necessarily due to a rise in new registrations but to continuing cases. The commonest diagnosis of children receiving HETF is Cerebral Palsy (just under 20% of total) and with prolonged survival in these patients, there is an increasing demand on healthcare resources (2). There is a steady increase in the proportion of children receiving nasogastric feeding rather than gastrostomy feeding. This could be related to the increasing difficulty of accessing paediatric surgical or gastroenterology services for gastrostomy tube placement (3). Gastrostomy tubes account for 53.7%, Nasogastric tubes for 45.3% and Jejunostomy the remaining 1% (2).

AIM
The aim of these guidelines is to support, inform and encourage best practice.

OUTCOMES
- To ensure provision of appropriate, competent and safe enteral feeding
- To ensure a smooth transition from hospital to home
- To clarify the roles of different healthcare professionals
- To prevent duplications and omissions
- To minimise morbidity and prevent complications associated with enteral tube feeding

Ethical & Legal Aspects of Enteral Feeding
The BMA classifies all interventions that have the potential to postpone the patient’s death as medical treatment. This therefore includes enteral (artificial) feeding (4).

All medical treatments must meet the following ethical principles:-
Beneficence – treatment actively contributes to the welfare of the patient
Non-Maleficence – treatment does not inflict intentional harm

Identifying the need for Enteral Feeding
Before deciding whether a child should be artificially fed, it is important to identify the reason the child requires this intervention:
- A short term measure to maintain nutrition whilst a child is unable to eat e.g. due to an acute but reversible illness, side effects of treatment or a temporary exacerbation of an otherwise stable condition.
- A long term measure for a child with a chronic but stable illness or injury preventing them from taking adequate oral nutrition
- A short or long term measure for a child who is suffering from a degenerative condition.
See Table 1 for specific clinical examples (5).

**Table 1 – Indications for Enteral Nutritional Support in Children**

<table>
<thead>
<tr>
<th>Indication</th>
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<td>Unpalatability of specialised feeds</td>
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**Provision of Appropriate Information**
When artificial feeding is being considered by a local multi-disciplinary team, the child & family should be given the following information:

- Proposed benefits of treatment e.g. weight gain, improved comfort
- All possible risks and complications of treatment e.g. infection, granulation, gastro-oesophageal reflux, tube migration, leakage, vomiting, retching, diarrhoea, constipation, blocked tube
- Impact of tube feeding for the child e.g. body image, restricted freedom
- The impact of tube feeding on the family e.g. reduced stress at having to maintain nutrition orally, altered relationship with the child due to feeding being an important social part of family life
- Impact of tube feeding on the child’s carers or school and the need for training

Once appropriate information has been given to the parents, a multi-disciplinary meeting has been held and the decision has been made to commence enteral feeding, it is important that goals are set.

**Setting goals and Reviewing Progress**
It is important to establish the short and long term goals of the enteral feeding. A review date should be set at the start of the treatment, where goals and problems can be assessed and the benefit of treatment evaluated. The review should be multi-disciplinary involving the Paediatrician, Dietitian, parents, child (where appropriate) and any other support services involved in the child’s care e.g. school, carers, community nurses, speech & language therapists etc.

**Enteral Feeding tubes**
Enteral feeds can be administered via a number of routes.

**Nasogastric Tubes**
Finebore nasogastric (NG) tubes are the most commonly used NG tubes and are usually the most suitable route for short term feeding. These tubes have a small internal diameter (1-2mm), are flexible & available in PVC for short term and in polyurethane for longer term feeding.
Gastrostomy tubes
Traditionally gastrostomy tubes have been performed surgically and involve the creation of a tract between the stomach and the abdominal surface. Endoscopic placement is now the preferred method of placement and has the advantages that it should only involve a light general anaesthetic, is quicker to perform, has fewer complications and is easily removed. Gastrostomy tubes are recommended for long term feeding. Most endoscopically placed gastrostomy tubes last for up to 3 years.

Button/Balloon Gastrostomies
Once the gastrostomy tract is formed, some children may have their gastrostomy tube replaced with a button gastrostomy. These are designed to be flush with the stomach and are more acceptable for the older child. Button tubes need extension sets to allow them to be connected to the giving sets. Button tubes are held in place by a balloon in the stomach. The volume of this balloon needs to be checked on a weekly basis by parents/carers. Refer to the Scottish Best Practice Guidelines for guidelines/ Manufacturer guidelines on care of these tubes and how to check balloon inflation.

Buttons should last 3-6 months. Parents keep a spare button so that if the child's button falls out /bursts it can be changed immediately. If a spare button is not available the old button should be held in place until it can be replaced. Patency should be maintained.

An alternative to the balloon/button gastrostomies is the Entristar RIG which is placed radiologically and held in place by an internal cage – see manufacturer's guidelines for replacement advice

Nasojejunal tubes
These are similar to NG tubes, but longer in length so that they can reach beyond the ligament of Treitz to the jejunum. They can be passed at the bedside or endoscopically, by trained healthcare professionals. A dual lumen tube is often placed for simultaneous gastric aspiration and jejunal feeding. Feeding tubes placed into the small bowel are used to overcome the problems of gastric stasis and subsequent risk of aspiration

Jejunostomy tubes
Similar to a gastrostomy, this involves forming a tract between the jejunum and the abdominal surface. A feeding jejunostomy may be performed either surgically or endoscopically.

Gastrojejunostomies
These are occasionally used where regurgitation/vomiting is a problem. They usually look like a standard gastrostomy with an extra connector on the end, which should not be removed.

The only differences in care are:

- The inner lumen is usually 7-9Fr and therefore very prone to blocking. Frequent flushing is essential
- Crushing tablets is likely to result in tube blockage. Alternative formulations should be investigated – discuss with the pharmacist. Also check site of action/absorption of drugs as giving them into the small intestine may reduce effectiveness
• Rest periods are not required when feeding into the jejunum

NASOGASTRIC (NG)/ PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) REFERRAL PROCEDURE

Referral for NG or PEG feeding should be made to the Dietitian or another member of the Multi-disciplinary team for initial assessment.

Where the ethical principles have been met, the child/family are aware of the implications of having an NG/PEG and what it will involve and agree to have an NG/PEG placed, the dietitian/feeding team will discuss with the child’s GP/consultant/multi-disciplinary team.

If a PEG tube is the most appropriate option, the child’s Paediatrician will refer to one of the Regional centres for further assessment and consideration for PEG placement. PEG’s are not placed in children at Darent Valley Hospital (DVH), although NG feeding can be initiated and started at DVH.

Families should be given 7 days supply of feed, giving sets and ancillary items such as pH indicator paper and syringes, on discharge from hospital. Supplies from other discharging hospitals will vary according to their own discharge policies, but it should be a minimum of 7 days. This allows time for the home delivery of feeds and giving sets to be arranged. Ancillary items may take longer to be arranged.

NASOGASTRIC TUBES

For placement and replacement guidelines refer to the Scottish Best Practice Guidelines and the National Patient Safety Agency (NPSA) Guidelines (6).

Guidelines for the size of syringe to be used in children, for aspiration of NG tubes are provided by the NPSA, but the manufacturers guidelines should also be considered.

Neonates: 2.5-5ml (7)
Children: 20-50ml (6)

PEG TUBE REPLACEMENTS

Referrals for PEG replacements should be made by the child’s GP/Paediatric Consultant to the hospital where the original tube was placed.

Fresenius Freka PEG’s
Children who have had a Fresenius PEG will usually have their tube routinely replaced after 2 ½ - 3 years, or sooner if necessary. The replacement will normally be a button gastrostomy, unless otherwise advised by the multi-disciplinary team, after discussion with the family.

When the MDT has decided that a gastrostomy is no longer required for nutrition/hydration, the child’s GP/Paediatric consultant needs to refer the child to the initiating centre for removal.

CARE OF GASTROSTOMIES

Skin care for balloon gastrostomies
Inspect the stoma site daily for cleanliness and check for signs of redness or irritation.
Gently wash the stoma site with soap and water using a soft wash cloth. Dry the stoma site thoroughly.
Clean and dry the outer surfaces of the button as necessary.
Do not use dressings around the button unless clinically indicated.
Turn the button in a full circle daily.

For other care instructions relating to PEG’s, refer to the Scottish Best Practice Guidelines.

EMERGENCIES / OUT OF HOURS

Gastrostomy tube blockages: refer to Scottish Best Practice Guidelines
If it is not possible to unblock the gastrostomy tube using the suggestions in these guidelines, a pancreatic enzyme preparation, ‘Clogzapper’ (Merck) can be used. This product contains a pre-measured amount of pancreatic enzymes that can digest enteral feeds and clear feed blockages. This will not usually work on blockages caused by drugs.
‘Clogzapper’ can be found in the community emergency kits:

Emergency Kits
These are kept at:

- Gravesend & North Kent Hospital – in black bag next to photocopier on M4
- Livingstone Ward – in a box file on the window ledge in the clinical room
- Willow ward

Each emergency kit consists of:

- NG tube – 8Fr Corflo (6Fr Corflo silk tubes on Willow)
- pH indication paper
- Replacement G-tube (Merck -14Fr or Medicina 12Fr tube on Willow)
- Universal flushing adaptor (for Freka PEG’s)
- Clogzapper
- Relevant aftercare booklets

Any equipment used from these kits should be replaced as soon as possible.

In the unlikely event that the gastrostomy tube cannot be unblocked and the child needs urgent medication/feeds then:

Buttons: remove blocked button and replace with new one
PEG’s: contact Willow ward who will arrange for the child to attend the ward to try and unblock the tube. If this is not possible, the child will need to go back to the initiating centre to have a new tube placed

Nasogastric tube blockages
If the NG tube becomes blocked, it should be removed and replaced with a new one. Nothing should be put down the NG tube to unblock it, if you are unable to confirm its position.

Displaced tubes
Office hours: contact the community children’s nurse/Ellenor nurse
Out of hours: contact Willow ward or the child’s Ellenor nurse

Replacement balloon gastrostomy tubes and spare NG tubes can be found in the emergency kits as detailed on the previous page.
MANAGEMENT OF COMPLICATIONS
It is important to report problems of vomiting, diarrhoea, constipation, abdominal distension, cramps, nausea or dehydration, weight loss or rapid weight gain, as these factors may indicate a need to alter the child’s feeding regimen or diet.

Diarrhoea:
Do not stop feeding – seek the Dietitian’s / children’s community nurse’s advice. In all cases of diarrhoea, review medication first, stop laxatives and review others. Faecal specimens may need to be sent for bacteriology. If gut infection is proven, it should be treated accordingly. Consider use of rehydration solutions.

Constipation:
If the child is regularly suffering from constipation or suddenly experiences a lack of bowel movements, contact the Paediatric Dietitian, children’s community nurse or GP.

Nausea and Vomiting:
- Ensure child is sat at a 30-45˚ upright position during feeding time and for at least one hour afterwards
- Careful feeding using a pump, to regulate the rate should reduce the risk of vomiting
- Consider other causes i.e. medication, medical reasons
- If gastro-oesophageal reflux is suspected seek medical advice
- Naso-jejunal or jejunostomy feeding may be considered if this is an ongoing problem.

Gastrostomy site infections
If discharge is present, take a swab of the site and await further advice from microbiology.

Overgranulation
Insufficient rotation of a gastrostomy tube or excess movement of the tube can cause granulation tissue. The overgranulated site may be constantly wet, bleed easily on contact and be prone to infection (6)

Discuss treatment options with the Community Nursing Team.

NASOGASTRIC /GASTROSTOMY FEEDING AT SCHOOL
For those children with a button, a spare button gastrostomy tube should be sent to school with the child and returned with the child in the evening. For further guidelines, refer to the Scottish Best Practice Guidelines.

ORAL HYGIENE
Refer to the Scottish Best Practice Guidelines

Support Group Information
Patients on Intravenous and Nasogastric Nutrition Therapy (PINNT) is a registered charity, which serves to support both adults and children who require nutrition therapy. Ask your Dietitian for details

Administration of feeds – refer to the Scottish Best Practice Guidelines
- Continuous feeding
- Bolus feeding
- Flushing
GIVING MEDICATION VIA NG/GASTROSTOMY TUBES
Refer to the Scottish Best Practice Guidelines.

FEED & EQUIPMENT ORDERING - HOSPITAL FEEDS
Standard Infant formulas: these are stocked in the milk kitchen and replenished by pharmacy.

Special Infant formulas & thickeners: small stocks of these feeds are kept in pharmacy and can be ordered via the Dietetic Dept or pharmacy
E.g. Nutramigen, Infasoy, SMA-LF

High Energy Infant formulas: these are not stocked in the hospital but can be ordered as needed via the Dietitian
E.g. SMA High Energy, Infatrini

Enteral feeds: these are not stocked in the hospital but can be ordered if needed via the Dietitian
E.g. Paediasure

EQUIPMENT
Pumps: Clearstar pumps are kept on Willow ward

Giving sets: a small supply is kept in the Dietitian’s office and more can be ordered as needed

Nasogastric Tubes (silk – 22” 6FR): a small supply is kept on Willow ward with additional supplies available from the Dietitian’s office

PVC NG tubes: stocked on Willow, with further supplies available from Community Children’s nursing team (CCNT)

Children admitted from the community on a feed, will usually bring their own pump, feed, giving sets and a spare tube (if appropriate) with them.

FEED & EQUIPMENT ORDERING/FUNDING – COMMUNITY FEEDS
Standard Infant formulas: obtained by parents

Prescribable infant formulas: ordered/funded by Dietitian & supplied via Home delivery company

Enteral Feeds: ordered/funded by Dietitian & supplied via Home delivery company

EQUIPMENT
Giving sets/Flexitainers: ordered/funded by Dietitian & supplied via Home delivery company
For all other equipment that may be needed for home feeds such as:

- Extension sets
- Bolus sets
- pH indicator paper
- Replacement tubes (NG & Button gastrostomies)
- Syringes

It is the responsibility of the child’s keyworker (Health Visitor/Children’s Community Nurse/Ellenor Nurse) to initiate the ordering of these.

Pumps: provided on loan, free of charge from pump manufacturers.

If the pump malfunctions, please contact the relevant company:

- Clearstar/Flexiflo – Abbott’s helpline 0800 0183799
- Kangaroo – Kangaroo at Home 01329 224075 (office hours) 01329 224000 (other times)

**MONITORING OF ENTERAL FEEDING**

It is recommended that the following measurements are made and recorded. If it is not possible or inappropriate to have these measured, the reasons should be documented.

**Hospital:**

- fluid balance should be recorded and bowel frequency and consistency noted. Weight should be recorded at least on admission and at other times when requested.

**Bloods:**

- urea
- Creatinine
- Electrolytes
- Glucose
- Liver profile
- FBC

These tests should be done on admission and at other times as requested.

**Community**

Weight should be measured as requested. Blood tests are not routinely done on children receiving enteral feeds at home, but can be requested if felt necessary.

**DIETETIC REVIEW**

The Paediatric Dietitian will visit all children discharged into the community with an enteral feed at home, within 1 week. They will then be reviewed on a regular basis until established.

Once established the Dietitian will contact the patient as a minimum every 6 weeks by telephone and will visit every 3 months, or more frequently as needed.

**FEEDS AND HYDRATION**

The dietitian assesses individual nutrition and fluid requirements and develops a
feeding regimen.

Below is a summary of the most common feeds used in infants/children.

**Infant Formulas**  
**Birth -1yr (or up to 8Kg)**

Whey Dominant:
SMA Gold, Farleys First, Milumil Aptamil, Cow & Gate Premium

67 kcal & 1.9g protein/100ml

**High Energy Infant Formulas**

Infatrini (birth – 1yr/8Kg)  
SMA High Energy (0-18 months)  
100 Kcal & 2.6g protein/100ml  
91 Kcal & 2.0g protein/100ml

**Paediatric Feeds**  
**1 – 6 years & 8 – 30Kg (9)**

Paediasure
This is a complete liquid feed providing 1 Kcal/ml

Paediasure with Fibre  
This is a complete liquid feed with 0.5g/100ml of soy fibre and provides 1 Kcal/ml

Paediasure Plus  
This is a high energy 1.5 Kcal/ml feed for children requiring a smaller volume of feed

Paediasure Plus with Fibre  
This is a high energy 1.5 kcal/ml feed with mixed fibre and fructo-oligosaccharides (0.5g fibre/100ml)

There are other disease specific feeds which are available and may be used on an individual patient basis.

**Storage of feeds/equipment** – refer to Scottish Best Practice Guidelines

**RISK IDENTIFICATION**

Possible risks identified in the development of these guidelines:

- Competency to use enteral feeding pumps
- Control of infection/contamination
- Wound care infection
- Aspiration pneumonia
- Metabolic consequences of feeding
- Passing/replacing enteral feeding tubes
All of these aspects are covered by this policy or by other policies e.g. Dartford & Gravesham NHS Trust Hospital Enteral Feeding Policy.

AUDIT/REVIEW

- The home enteral feeding service is continuously audited using an in-house computer system (CHIRON). It looks at details such as: numbers of patients, demographics, source of referral, diagnosis, outcomes, duration of feeding etc.

- The department contributes to the National Audit of Home Enteral Feeding - British Artificial Nutrition Survey (BANS)

PERFORMANCE INDICATORS

- Financial reporting to PCT Pharmaceutical Advisor quarterly

- Tube feed related hospital admissions

REFERENCES


2. Provisional Executive Summary –BANS report, 2003 data


7. Policy & Guidelines for insertion and checking position of nasogastric and orogastric tubes, in Tambootie ward 16/8/04


CONTACT NUMBERS

Dietetic Department – Darent Valley Hospital 01322 428439
(Mon-Fri 9-5pm)

Community Children’s Nursing Team 1322 428473
(Mon-Fri 9-5pm)

Ellenor Nurses – Livingstone Hospital 01322 221315

Darent Valley Hospital Switchboard 1322 428100
- for Willow ward
- for Microbiology

Abbott Hospital to Home Helpline 0800 0183799
(for pump and feed delivery queries)

Kangaroo at Home Helplines 1329 224075
(Mon-Fri 8-6pm)
01329 224000
(outside office hours)
APPENDICES

APPENDIX 1– AVAILABLE RESOURCES

The following resources are available or will soon be available from the Dietitian’s Office:

Samples of PEG/Button tubes
PEG placement video
Aftercare booklets – PEG’s/Buttons
Pump information booklets
PINNT information (support group)
Tube feeding at home – a parents/carers guide (currently being developed)
Tube Feeding – making the right choice (currently being developed)