Neonatal and paediatric guideline for safe use of enteral tubes

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Key Amendments

Date	Amendments	Approved by

Introduction

This guideline provide an evidence based guide for healthcare professionals on how to care for and check correct placement of enteral tubes; and how to provide safe enteral feeding in neonatal and paediatric patients.

This policy sets out the safe practice that must be followed in regards to enteral tube management at Worcestershire Acute Hospitals NHS Trust.

For the purpose of this document; nasogastric, orogastric, nasojejunal, orojejunal, and gastrostomy tubes inserted to facilitate feeding, administration of medicines and/or other liquids will be collectively referred to as '**enteral tubes'**.

This guideline can be used in conjunction with the **Neonatal and Paediatric Guideline for Enteral Tube Insertion.**

For neonatal and paediatric patients, Worcestershire Acute Hospitals NHS Trust (WAHT) only allow for the insertion of **nasogastric and orogastric** tubes in ward areas. Other kinds of enteral tubes (i.e. gastrostomy and jejunal) may be inserted in other Trusts and then be safely used on the ward areas at WAHT.

Patients covered

This guideline is applicable to any neonatal or paediatric patient requiring enteral tube feeding or who has an enteral tube in situ.

'Neonatal' includes any inpatient on the neonatal unit or any patient under neonatal care.

'Paediatric' includes any patient from the age of birth until 18 years old, who is an inpatient on any paediatric ward/area or under a paediatric team.

For policies in the community, please see Neonatal Outreach or Orchard Service guidelines.

Outcomes of policy

- To provide guidance towards appropriate, competent and safe use of enteral tubes
- To minimise morbidity and prevent complications and incidents associated with enteral tube use.
- To provide information and rationale on enteral competencies for relevant staff.
- To provide guidance on successful discharge with enteral tube.
- To provide guidance for the safe use of jejunal and gastrostomy tubes.

This guideline is for use by the following staff groups:

Registered nurses, doctors, healthcare assistants and nursery nurses who have been assessed to be competent in these skills.

Duties and responsibilities

- **Ward Managers and Sisters** are responsible for ensuring that all nursing staff (including non-registered staff) are aware of this policy and follow the safe practice within it.

- **Consultants** are responsible for ensuring that medical staff are aware of this policy and follow the safe practice within it, particularly around ordering and interpreting x-rays.

- **Radiographers** are responsible for ensuring that the feeding tube can be clearly seen on this x-ray if a check for feeding tube position check is requested.

- **All clinical staff** are responsible for following this policy and reporting any adverse events via Datix. Staff who assess the position of feeding tubes must undertake the mandatory training outlined in Section 2.

- **The Compliance and Governance Manager** is responsible for uploading all policies and strategies approved by the Policy Approval Group.

Contents

Section 1 - Introduction to enteral tubes.

Enteral tubes are a means of offering additional nutritional support in neonates and children who cannot adequately meet their nutritional needs by oral feeding alone. Enteral tubes can also be used for ease in administering medications; or may be inserted to help with gastric drainage, for example with some post-operative and critically unwell patients.

This guideline mostly focusses on **nasogastric** tubes as the main method of enteral feeding as this is the first choice for feeding tubes in neonates and paediatrics.

Other methods of enteral feeding are discussed in Section 10 of this guideline.

In paediatric patients it is common to use GBUK 'Nutricare' or 'Nutricare Infant' enteral tubes as these tubes can be left in situ for up to 90 days.

It is uncommon to use Ryle's tubes in children and neonates for gastric drainage; instead an enteral tube is used with a GBUK Enteral drainage bag attached. Ryle's tubes must **NEVER** be used for feeding or administration of medicines.

Enteral tube feeding may be the patient's sole source of nutrition, or may be used to supplement the patient's oral diet or as a weaning off parenteral nutrition. It is important that it is **clearly documented** by a member of the medical, nursing or dietitian team what the enteral tube is to be used for and for how long it is expected to be required.

Section 2 - Competencies required.

The use and care of enteral tubes should be carried out by registered nurses and doctors who have been deemed competent to do so (National Institution for Health and Care Excellence, NICE 2017) using the **Neonatal and Paediatric Nasogastric Tube Feeding Competency Framework**.

If a student nurse or doctor is to insert, use or care for an enteral tube it must be under the direct supervision of the registered nurse who remains accountable for any care given.

All healthcare professionals involved with enteral tube position checks must be deemed competent via both theoretical and practical assessment.

Training for the insertion, use and care of enteral tubes will be given by competent senior nursing staff. Once initial training has been completed, the practitioner should carry out at least three successful insertions under the supervision of a competent senior nurse before being deemed competent.

Administration of feed and medicines via nasogastric tube using an oral/enteral (purple) syringe may only be carried out by those who have undergone approved Trust training and supervision and have been deemed competent in this skill. This applies to all nurses, doctors, health care assistants and nursery nurses.

Flocare feeding pumps

Use of Flocare Infinity pumps requires additional online training, and this is available online on the Flocare Infinity pump website;
https://www.nutriciaflocare.com/Flocare2020/index.php .

Paediatrics - This must be completed by staff at **least once** before they can be deemed competent, and then 2 yearly thereafter.

Section 3 – Nasogastric tube care and on-going placement confirmation.

Positioning and risk of aspiration

The enteral tube is only deemed safe to be used once the tube is secured and the correct placement is confirmed.

Nasogastric tubes must never be flushed or used before gastric placement has been confirmed. Severe harm or death from misplaced nasogastric tubes is deemed a 'never event' (National Patient Safety Agency, NPSA 2012).

Nasogastric and Orogastric tube position must be confirmed at least every 6 hours (4 hours in patients with a higher risk of aspiration*), and before anything is to be given via tube. This may be done by aspirating a small amount of gastric contents using an oral/enteral (purple) syringe, and checking the pH using the correct pH indicator paper. This value should be **<=5.5.**
The pH value should be documented on the appropriate Trust paperwork as used in the clinical area;
Paediatrics - Nasogastric Tube Management and Enteral Feed Check Record (**APPENDIX 1**)
Neonates – documented on the fluid balance chart (**APPENDIX 2**).

It is important to note that if a patient is on any antacid or reflux medication, the pH value of the gastric contents may be altered and there is likely to be a stomach pH greater than 5.5. It is therefore difficult to accurately confirm tube placement and an individual risk assessment on a case by case basis may be required after discussion with the medical team.

Paediatrics - A 20-60ml oral/enteral (purple) syringe should be used to aspirate 2-5ml of gastric contents.

Neonates - A 5-10ml oral/enteral (purple) syringe should be used to aspirate 1-2ml of gastric contents.

***Patients at greater risk of aspiration**
Patients who are at a greater risk of aspiration include those with a decreased conscious level or mental state; those who exhibit uncooperative behaviour; or those that require frequent nasotracheal suctioning.

In addition to regular checks, tube position must also be checked if the following occur:

- The patient has coughed violently, vomited or retched.
- The tube appears to be longer out of the nostril or mouth, or the measurement at the nose/lips has changed.
- The patient can feel the tube coiled in the throat.
- The patient or nurse suspects tube malposition.
- The patient displays signs of respiratory distress such as shortness of breath, wheezing, changes in pallor/colour, increased work of breathing.
- There has been a decrease in oxygen saturation readings.

For advice on checking the position of jejunal and gastrostomy devices, refer to section 10 of this document.

During feeding and administration of anything via the tube, it is ideal for the patient to have their head and shoulders elevated to a **30-45º angle**, and for at least **1 hour** afterwards to reduce gastric pooling and the risk of aspiration.

The patient should be observed for a sudden onset of respiratory difficulty and in this event, any feeding or administrations via the tube should be stopped immediately and medical assistance sought.

The patient should be regularly monitored for pyrexia and tachycardia associated with wheezing, which may also indicate aspiration.

Skin care

Regular skin care will reduce irritation and the risk of infection.

- Wash hands before and after tube care.
- Replace fixation tape only when it is dirty or peeling off.
  In **neonates** – 'Appeal' wipes can be used to comfortably remove adhesive and protect skin.
- When changing the tape, cleanse the skin using mild soap and water and dry thoroughly.
  In **neonates** – clean with water only.
- If possible, alter position of tube to skin when re-taping to reduce chance of pressure areas and subsequent irritation.
- **Avoid** using creams and powders as they can damage the tube.
- Ensure that the patient is not allergic to the fixation tapes.

Flushing

Nasogastric tubes require regular flushing to prevent blockage.

- In **paediatrics**, sterile water must be used to flush tube after feeding and medications to using oral/enteral (purple) syringe to ensure substances do not sit in the tube. The amount of water appropriate will be relevant to the child's size; approx. 2-5ml will suffice.

  Some children may require additional water flushes as per Medical / Dietitian plan to ensure adequate hydration.

  Flushes may be decanted from a 90ml Cow + Gate sterile water pot; however the bottle must be labelled with patient name, must not be shared with other patients, and must be discarded after 12 hours of opening. At home, **Orchard** advise that cooled boiled water can be used as a flush.

- In **neonates**, the tube is **only** flushed after administration of medication. This can be done by using a very small amount of air or by flushing the tube with the stomach contents from aspiration using an oral/enteral (purple) syringe. Water is not used as to not overload the babies with too much fluid.

- When flushing the tube, a 'push, pause' technique with the oral/enteral (purple) syringe should be used rather than a slow steady push in order to create turbulence and to prevent blockages.

Section 4 – Administration of medicines.

- Patients who need to have medicines administered via an enteral tube should have their prescriptions reviewed and their medicine regime simplified where possible. Consideration should be given to using other routes and/or once-daily regimes where possible.
- The prescriber must change the route on the prescription chart to 'NG', 'OG', 'PEG', 'NJ' as appropriate, to make it clear that medicines are to be given this way.
- Where possible all liquid formulation or soluble tablet medicines should be administered using an oral/enteral (purple) syringe to ensure accurate doses and avoiding blockage of the tube as per Trust administration of oral and enteral liquid medicines policy **(MedPolSOP11).** Additional care should be taken when administering thick liquid solutions via enteral tubes to reduce the risk of blockages.

Any medications that are to be administered via an enteral tube should be discussed with a **pharmacist** to check suitability. The pharmacist will suggest alternative medicines/routes if there is doubt about the suitability of a medicine to be given via an enteral tube.

If unsure about any aspect of medicine administration via the enteral route – please contact the ward pharmacist. For out-of-hours – contact the on-call pharmacist via switchboard.

There are some types of tablets/capsules that **must not be** crushed or opened:

Medicines that must not be crushed or opened Type of Medication	**Example**	**Reason**
Enteric Coated Tablets	Diclofenac, Sodium Valproate	Medicine designed not to be released in stomach.
Slow Release / Modified Release Preparations	Diltiazem, Nifedipine, Verapamil	Medicine designed to be released over prolonged period.
Cytotoxic	Methotrexate	Risk to practitioner
Antibiotics	Flucloxacillin	Risk to practitioner
Prostaglandin Analogues	Misoprostol	Risk to practitioner
Hormone Preparations	Cyproterone	Risk to practitioner

National Patient Safety Agency Patient Safety Alert no. 19 (March 2007)
Promoting safer measurement and administration of liquid medicines via oral and enteral routes
This Patient Safety Alert requires the Trust to ensure that only oral/enteral syringes (that cannot be connected to intravenous catheters or ports) are used to measure and administer oral liquid medicines.
Learning from **HSIB 2019**: 'Inadvertent administration of an oral liquid into a vein'. Should be considered.

The Trust Medicines Policy MedPolSOP11 '**Administration of Oral and Enteral Liquid Medicines**' (Worcestershire Acute Hospitals NHS Trust, 2019), MedPolSOP22 **'Neonatal Unit Medicines Administration'** (Worcestershire Acute Hospitals NHS Trust, 2021) and MedPolSOP21 **'Children's Ward Medicines Administration'** (Worcestershire Acute Hospitals NHS Trust, 2021) must be followed.

Common drug and enteral feed interactions

Phenytoin	Check blood levels of this drug regularly if patient is on enteral feeds. A higher dose may be required. A 2 hour feed break pre- and post-liquid phenytoin is needed during enteral feeding.
Digoxin, Carbamazepine	Check blood levels of these drugs regularly if patient is on enteral feeds. A higher dose may be required.
Antacids / PPIs	These drugs can block a feeding tube (the metal ions bind to proteins). Consider alternative medications.
Penicillins	Absorption may be reduced by feeds. A higher drug dose may be required. If

	possible, stop feeding 1 hour before and 2 hours after administration
Antibiotics e.g. ciprofloxacin, tetracycline's, rifampicin	Absorption may be reduced by feeds. Consider alternative medications or a higher dose.

Section 5 – Administration of feeds.

Continuous or prolonged enteral feeding may be achieved through the use of **Flocare Infinity Enteral Feeding Pump** with the **Flocare Infinity** pack giving set.

Bolus feeding may be achieved by using an oral/enteral (purple) syringe as a reservoir for the feed or by using the **Flocare Bolus Set.**

A picture guide to using either the Flocare Infinity or Flocare Bolus sets is shown on the back of the packaging for these sets.

Patient feeding regime will be dictated by medical, nursing or dietitian staff as appropriate:

- If the patient will be receiving long-term enteral feeding or requiring nasogastric feeding to aid with nutrition, the feeding plan will likely be established by the dietitian team. The duration and pattern of feeding will be tailored to the patient's needs and may be changed to what is best tolerated by the patient.
- For patients on continuous feeds, the standard is for 20 hours of feed with 4 hours rest a day. This rest period allows the gastric pH to reduce, helping to protect against infection.
- For patients requiring short term or acute enteral feeding, the feeding plan may be established between the medical and nursing teams and determined as appropriate to the patient's needs.

All feeds, flushes and medications must be clearly documented on the fluid balance chart.

Reintroduction of oral feeding - Paediatrics

Progression with oral feeding and development of feeding skills must be encouraged if the child is safe to feed orally. Where there may be concerns about a child's safety to swallow, a referral to a Paediatric Speech and Language Therapist should be considered. This may need to take place in the community.

Paediatric patients requiring long-term enteral feeding who are tolerating increasing amounts of oral feed / diet must not be taken off tube feeding without an assessment by the Dietitian. There should be a planned, gradual reduction of tube feeds in order to maintain patient weight.

It is important to closely monitor the child's oral intake during this transitional period – all food/tasters must be clearly documented on a feed chart.

To encourage oral feeding:

- Start slowly, perhaps once daily, offering small amounts of food or milk. Never force feed.
- Discuss with the Dietitian stopping enteral feeds 1 - 2 hours prior to an oral feed.
- Sit in front of the child while trying with oral feeds so that you can be seen at all times.
- Give as much positive encouragement of foods or milk are accepted.
- Introduce new tastes gradually.
- An older infant who has been exclusively tube may not accept foods normal for age.

Parents / carers must be involved in this decision and the process as much as possible.

Introduction of oral feeding – Neonates

Special care should be taken with Neonatal patients in helping to develop their oral feeding skills.
It is usually with the discussion of medical and nursing staff that the decision is made to start introduction of oral feeding.
This decision should be made with the input of parents / carers and they must be involved in the process as much as possible.

For more guidance, see Neonatal guideline '**Progression to Oral Feeding in Preterm Babies'** (WAHT 2019).

Milk feeds

All milk feeds should be checked by 2 ward members (i.e. nursing staff, healthcare assistants, nursery nurses, nursing students etc.) to have their bottle intact, to be in date and the correct milk for the patient. This should be documented on the appropriate column on the fluid chart **(APPENDIX 2) (Neonates)** Infant Feed chart **(APPENDIX 3) (Paediatrics).**

If a container of feed is pierced with a feed pump set and hung immediately, this can be hung for up to 24 hours as it is an enclosed circuit system.

Once a milk bottle is opened the feed must be started within 1 hour. If the milk is decanted into another container, this can be hung for 4 hours and then must be discarded.

If container of milk is opened and is not immediately being used, it must be labelled with the patients name, and the time of opening using the ward milk labels **(Paediatrics - APPENDIX 4)** and placed in the milk fridge only. This can be kept in the fridge for up to 24 hours and then must be discarded.

Milk must be bought to room temperature before administering via tube.

For neonates and young infants the following apply:

- Do not plunge feed
- The speed of feed administration should be titrated as it is tolerated by baby
- Be observant for any baby stress cues – if indicated, offer brief pauses to the feeding.

For specific guidance for breast milk, see **'Breast Milk Handling and Storage'** (WAHT 2019).

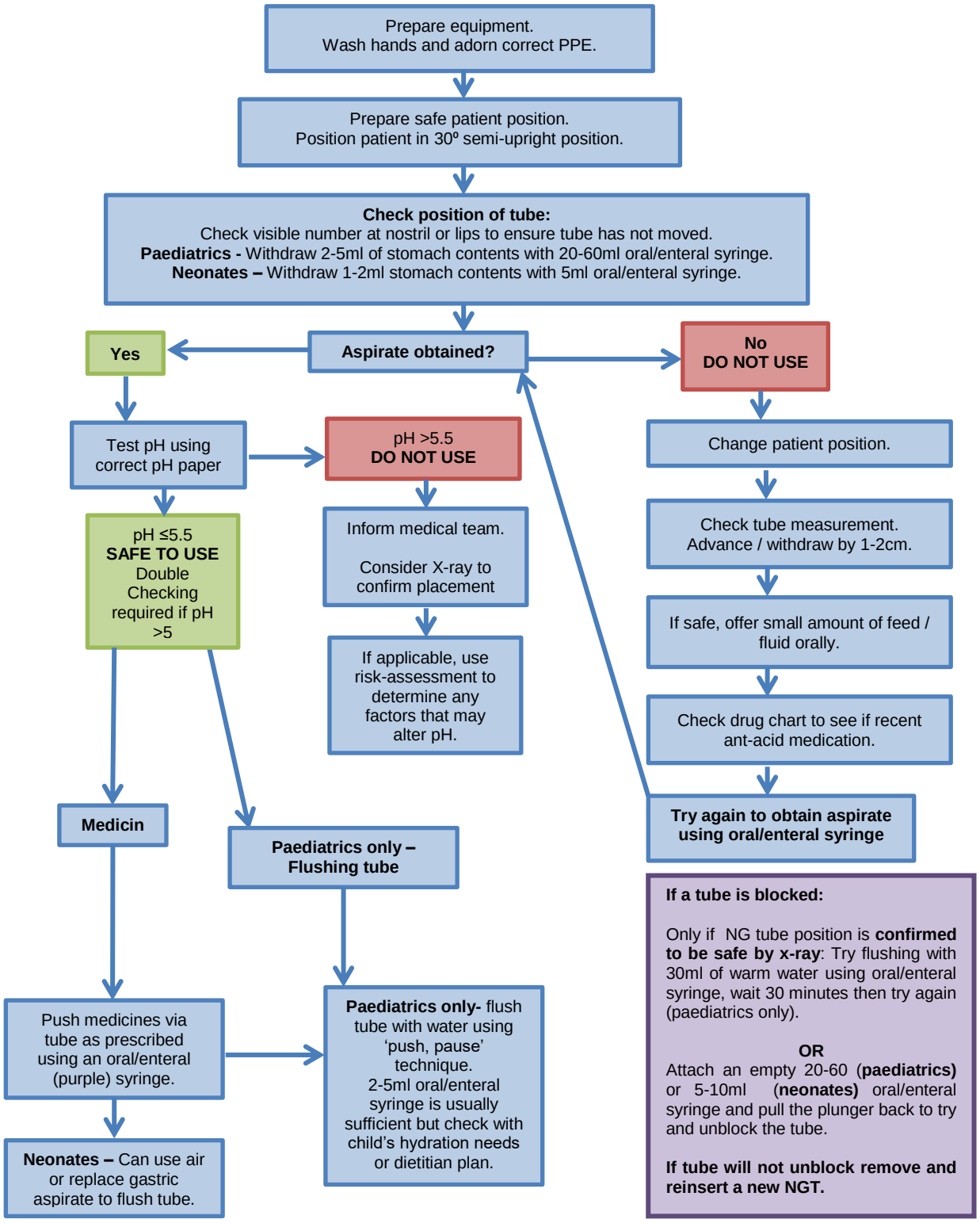
Blended food/diets

For older infants and children in the community, it has become popular for some parents to want to use a diet of liquidised food for their child's tube feed.

For any inpatient, commercial feeds **only** must be used for the following reasons:

- For patient safety, we must abide by manufacturer's instructions for the use of the tubes.
- There is a risk of the foods being contaminated with bacteria if they are to be liquidised on the ward or brought in from home.
- The texture of the blended food cannot be of a guaranteed consistency and there is a risk of the tube becoming blocked.
- It cannot be certain that liquidised food will provide the best possible nutrition for the patient whilst they are in hospital.

Section 6 - Safely using nasogastric or orogastric tube



For the use of jejunal and gastrostomy tubes, see section 10.

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Safe feeding via nasogastric or orogastric tubes

Prepare equipment.
Wash hands and adorn correct PPE.

Prepare safe patient position.
Put patient in 30º semi-upright position.

Check position of tube:
Check visible number at nostril or lips to ensure tube has not moved.
Paediatrics - Withdraw 2-5ml of stomach contents with 20-60ml oral/enteral syringe.
Neonates – Withdraw 1-2ml stomach contents with 5ml oral/enteral syringe.

Aspirate obtained?

Yes

Test pH using correct pH

pH ≤5.5
SAFE TO USE
Double Checking required if pH >5

pH >5.5
DO NOT USE

Inform medical team.

Consider X-ray to confirm placement

If applicable, use risk-assessment to determine any factors that may alter pH.

No
DO NOT

Change patient position

Check tube measurement.
Advance / withdraw by 1-2cm

If safe, offer small amount of feed / fluid orally

Check drug chart to see if recent ant-acid medication

Try again to obtain aspirate

If a tube is blocked:

Only if NG tube position is **confirmed to be safe by x-ray**: Try flushing with 30ml of warm water, wait 30 minutes then try again (paediatrics only).

OR

Attach an empty 20-60ml **(paediatrics)** or 5-10ml **(neonates)** oral/enteral syringe and pull the plunger back to try and unblock the tube.
If tube will not unblock remove and reinsert a new NGT.

Is patient suitable for bolus or pump feeding?

Bolus

Paediatrics – prime bolus feed set using milk feed

Connect the feed giving set or oral/enteral syringe to end of enteral tube and hold syringe up to allow milk to drip into the stomach.
Paediatrics – 20-60ml oral/enteral syringe
Neonates – 20ml oral/enteral syringe

If feed appears to be going too quickly, lower height of syringe.

If feed appears to be flowing too slow, raise height of syringe.

Pump

Turn pump on by holding down on/off button until it beeps

Set up bottle of feed and prime set using feed pump. **'fill set'**

Set pump to establish amount of feed **'dose/vol'** and how fast '**rate'**

Connect feeding set to end of enteral tube and press **'start/stop'**

Paediatrics only – At end of feed, flush tube with water using 'push, pause' technique.
5-10ml is usually sufficient but check with child's hydration needs or dietitian plan.

*In neonatal patients if the tube has been confirmed as being in the stomach, it is routine to replace the aspirated stomach contents. This is to minimise fluid loss.

During a feed:

Watch child to make sure they do not pull at tube.
Stop feed and re-check tube position if:

- Tube appears to have moved
- Child vomits
- Child starts coughing / choking
- Child has a change in colour – becomes pale or blue

SEEK MEDICAL ADVICE

Milk feeds

All milk feeds should be checked by 2 people.

If a container of feed is pierced with feed pump set and hung immediately, this can be hung for up to 24 hours as it is an enclosed circuit system.

Once a milk bottle is opened the feed must be started within 1-2 hours. If the milk is decanted into another container, this can be hung for 4 hours and then must be discarded.

Once opened, unused milk can be stored in fridge for up to 24 hours – **it must be labelled with patient details.**

Section 7 – Troubleshooting

If unable to obtain aspirate:

- Reposition patient – lay patient on left side if possible and re-aspirate tube. If unsuccessful, try moving patient between left and right side and into an upright position then re-aspirate.

- Check tube measurement at edge of nose/lips. Advance or withdraw tube 1-2cm and re-aspirate tube.

- If safe to do so, offer patient small amounts of fluid or feed orally then re-aspirate tube.

- Check drug chart to see if patient receives anti-reflux or anti-acid medicines and perform appropriate risk assessment / discuss with medical team.

Specific guidance for neonates

Neonates differ physiologically to children and the NPSA (2005) has recommended the following:

- None of the existing methods for checking feeding tube position is totally reliable. Their advice is based on the premise that it is better to base clinical decisions on one reliable test (pH indicator paper or radiography) than a combination of tests with varying reliability.
- Small bore feeding tubes are particularly difficult to gain aspirate from.
- Tube markings should be used for all babies to enable accurate measurement of depth and length and the position of the tube documented.
- Although radiography is the most reliable indicator of feeding tube position, x-rays should not be 'routinely' used. However if the baby is going to have an x-ray as part of their clinical care, the feeding tube should be placed beforehand and checked for positioning.
- If the pH is outside the safe range AND an x-ray is not planned as part of routine care, a risk assessment should be performed and the following factors which may contribute to high pH considered:
    - the presence of amniotic fluid in a baby under 48 hours old.
    - milk in the baby's stomach, particularly if they are on one to two hourly feeds.
    - use of PPI / antacid medication to reduce stomach acid.

Techniques that must <u>never</u> be used

The following have been considered by the NPSA to be 'never events' and **should not be used:**

- The 'whoosh' test – injecting air into the tube and auscultating the stomach.
- pH test of gastric aspirates using litmus paper.

- Interpretation based on the appearance of the aspirates alone.
- Injecting water into a feeding tube to confirm its position.
- Internal stylets/guidewires should NOT be lubricated before feeding tube position has been confirmed.
- Confirmation of feeding tube position based on x-ray alone by staff that have not been deemed competent to perform this assessment.

Additional advice for neonates:

- DO NOT interpret the absence or respiratory distress as an indicator of safe positioning.
- DO NOT test correct tube positioning by monitoring for bubbling at the end of the tube.

X-ray confirmation

Radiography is no longer recognised as the gold standard for determining tube position and should be used as a **second line intervention**. Attempts should be made to obtain gastric aspirate before sending the patient for x-ray.

Chest X-ray is required when no aspirate can be obtained or pH is consistently over 5.5.

The x-ray request form must clearly state that the purpose of the x-ray is to establish the position of a gastric or jejunal tube for the purpose of feeding or medication administration.

The radiographer must take responsibility for ensuring that the feeding tube can clearly be seen on the x-ray. The x-ray must only be interpreted by clinicians who have been deemed competent in assessing the position of feeding tubes by x-ray.

The assessment of feeding tube placement must be documented in the patient's medical notes and must include:

- Confirmation that the x-ray viewed was the most recent for that patient.
- The length of the feeding tube at the nostrils or mouth at the time of the x-ray.
- How the tube placement was interpreted.
- Clear instructions as to any required actions.
- If the x-ray has been formally reported upon, a clinician must write in the healthcare record that they have viewed the radiologists report and that the feeding tube position is confirmed as satisfactory.

Any healthcare professional that relies on x-ray confirmation of the tube's position should confirm before feeding that:

- The entry in the patient's notes is the most recent one.
- The tube has not become dislodged by cross-checking the measurement of the tube at the nostril or mouth with the entry confirming correct tube placement.

Any tube identified by x-ray as being in the <u>incorrect</u> position must be removed immediately and documented in the medical notes.

If applicable, the guidewire may be removed prior to position check. It is not required for x-ray purposes.

If the nasogastric tube becomes blocked:

- If attached to the bolus giving set; check the clamp is open.
- Attach an empty 20-60ml (**paediatrics)** or 5-10ml (**neonates)** oral/enteral (purple) syringe and pull the plunger back to try and unblock the tube.
- **Paediatrics only -** Only if NG tube position is **confirmed to be safe by x-ray**: Try flushing with 30ml of warm water using an oral/enteral (purple) syringe, wait 30 minutes then try again.
- **DO NOT** use too much force and do not use any sharp objects to try and unblock tube
- **DO NOT** try to reinsert the guidewire in an attempt to dislodge the blockage. The wire could perforate the tube and damage adjacent organs.
- If tube will not unblock remove and reinsert a new NGT.
- Review flushes and medication to prevent repeat blockages.

Section 8 – Infection prevention and control

There are associated infection risks with enteral feeding due to potential contamination during feeding preparation and administration.

Aseptic non-touch technique (ANTT) principles should be followed when preparing feeds / meds / flushes and throughout the duration of enteral feeding.

Effective hand washing techniques should be adhered to and appropriate Personal protective equipment (PPE) should be worn.

All aspects of care should be taught to parents/carers before discharge in relation to minimising infection. Instructions regarding cleaning of reusable syringe, extension sets and feeding pump should be discussed. All used disposable items at home should be bagged and placed in the household bin; enteral syringes cannot be put into household recycling.

Section 9 – Consideration for discharge with an enteral tube

The decision to discharge a patient with an enteral tube should be made by the consultant in charge of a patient's care after discussion with the appropriate members of the MDT including nurses, dietitians, pharmacists, etc. and the patient / their parents/carers.

Where possible, it must be identified early whether a patient is likely to be discharged with a nasogastric tube in order to allow time to inform the relevant agencies and to train parents/carers in the use of the tube and safe tube care. The dietitian should be contacted as soon as possible for the patient to be given an enteral feed pump and stand.

Parents/carers should be deemed competent in all aspects of their child's enteral feeding device and regime at the time of discharge. Parents may be deemed competent using the relevant competency framework. A copy of these competencies must be forwarded to the relevant community team for their records.
Neonatal - '**Neonatal Nursing procedure for teaching parents how to administer naso-gastric tube feeds at home'.**
Paediatric – 'Paediatric nasogastric competency framework for parents/carers'

- In **neonates**, Neonatal Outreach must be involved as early as possible once it is possible that an infant will go home with an enteral tube.

- In **paediatrics,** Orchard Community Nursing Service must be informed as early as possible.

The nurses will liaise with appropriate community nursing team to inform them of the patient being discharged with an enteral tube. This is so the community nurses can be available to help with any problems at home i.e. re-passing tube, troubleshooting etc., and to set the patient up on Nutricia Homeward for the continuing delivery of enteral equipment to the home. The dietitian will add the feed prescription to Homeward once this is set up.

The dietitian will liaise with the community dietitian if appropriate to arrange community input and review of feeding regimes and nutritional care.

The doctors will arrange any outpatient follow up as appropriate to the child's needs.

These referrals and follow up arrangements must be completed before the child is discharged home.

On discharge the nursing team will provide the patient with at least 7 days' worth of all equipment and milk/specialist feed and 1 spare NG tube. This is to allow time for the community nurses to arrange ordering and delivery of supplies.

If a patient is discharged on specific milk as ordered by the dietitians, this must be prescribed on the EDS or Badger discharge letter with instructions for the GP to continue. The dietitian will contact the GP to request the feed prescription is signed off on Nutricia Homeward.

All children discharged home with a nasogastric tube will automatically have open access to Riverbank ward and can attend the ward if there are problems with the tube. In daytime hours, Orchard Service or Neonatal Outreach are the preferred agencies to contact.

- See discharge checklist **(APPENDIX 5).**

Section 10 – Alternative enteral tubes
(APPENDIX 6)

Orogastric tubes

Orogastric feeding may be considered in patients where a nasogastric tube cannot be placed due to physical reasons (i.e. nasal trauma, nasal abnormalities) or due to the treatment the child is receiving (i.e. CPAP).
This tube is managed in the same way as a nasogastric tube but the tube is inserted into the stomach via the mouth and is secured to the chin.

A nasogastric tube rather than an orogastric tube should always be inserted unless there is a documented contra-indication to this procedure, as the risks of tube migration are lessened.

Nasojejunal and orojejunal tubes

A Jejunal tube looks very similar to a gastric tube but it is longer in length and is advanced into the jejunum (small intestine) rather than sitting in the stomach.

Nasojejunal or orojejunal tubes may be placed long-term for patients who have not tolerated having a nasogastric or orogastric tube and may have some difficulties with absorption of milks and medicines.

These tubes must clearly be labelled as jejunal tubes.

Some patients may have a tube with two attachments at the end - a **gastric** attachment (into the stomach) and a **jejunal** attachment (into the jejunum). It is important that these separate ends are labelled so it is clear which tube is gastric and which tube is jejunal.

X-ray is used to definitively confirm correct jejunal placement at time of insertion.

To confirm tube placement before use, the length/mark at the nostril must be checked against the insertion record and documented in the patient notes.

It is not advisable to routinely aspirate a jejunal tube as this can cause it to collapse and retract back into the stomach.

Aspiration of a jejunal tube should only be done if there are concerns that the tube has displaced based on clinical judgement:

- Gently push 5ml of air using an oral/enteral (purple) syringe into the tube, briefly remove syringe, reattach and then attempt to draw back.
  If a vacuum is present, this is an indication that the tip of the tube is within the intestine.
- The smallest oral/enteral (purple) syringe that can be used to aspirate the tube is 10ml.

- Fluids pass through the jejunum and do not accumulate within in so obtaining an aspirate can be a timely process and may not always be possible. If there are other indications that the tube is in the correct place, an aspirate is not required.
- Pulling against a vacuum is the only way to achieve an aspirate from the jejunum, but excessive pressure on the tube can contribute to its displacement from the intestine.
- If air is easily drawn back up the tube, this is a strong indication that the tube is in the stomach.
- If an aspirate is obtained, test pH using appropriate pH strips for human gastric contents. Safe pH is between **6-8**.
- A record must be maintained showing the length of the jejunal tube at the nostril or mouth from initial placement and x-ray confirmation.
- Prior to anything being administered via the jejunal tube, the length of the tube should be checked and documented.
- After prolonged use, if the numbers wear off the tube, the tube should be marked with a black line at the nostril/mouth to indicate correct placement length.

Feeding via the jejunal tube must be through a pump as the small bowel cannot tolerate large volumes of feed, and feeds must be given **continuously** and administered over a slower rate.

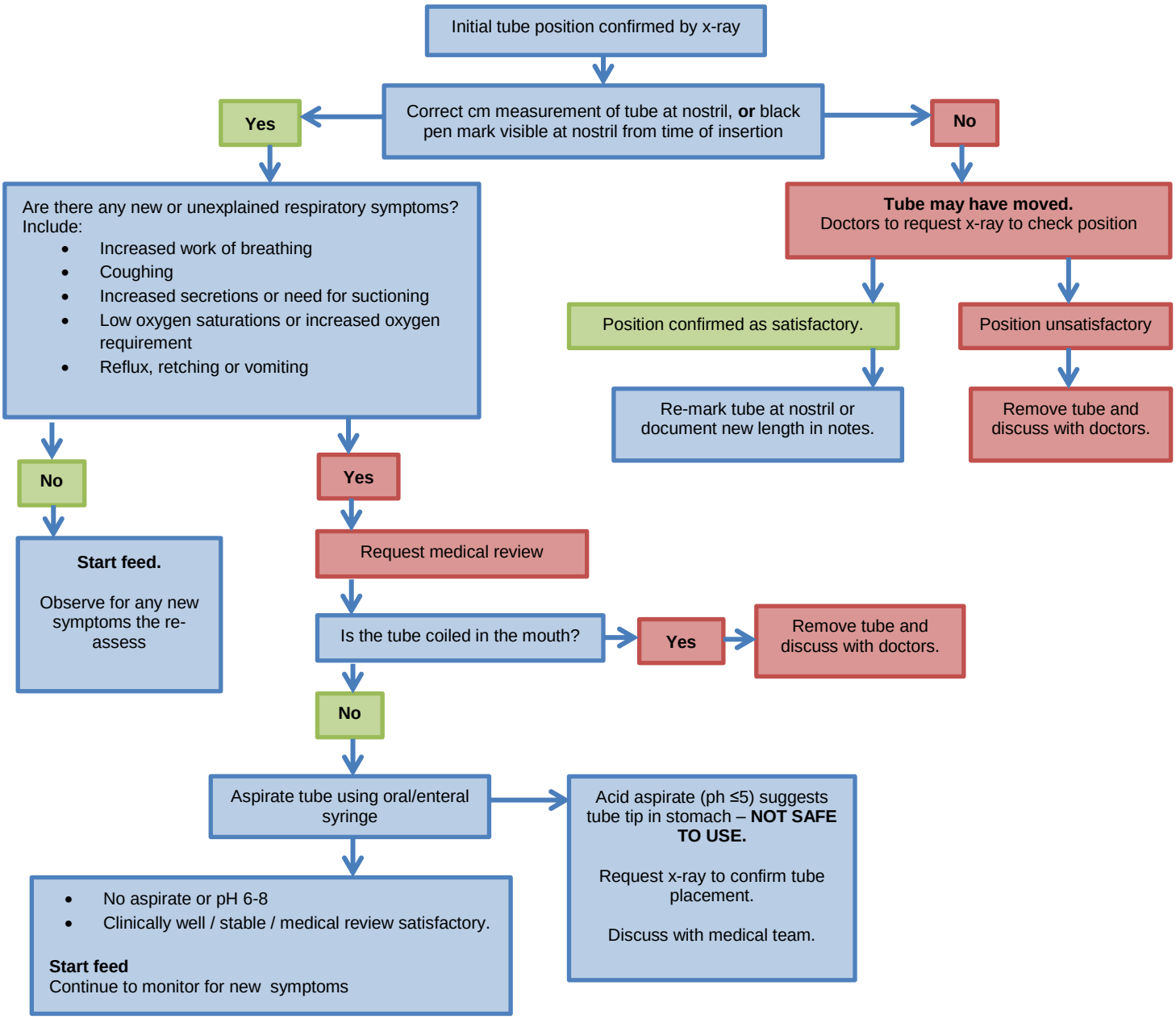
Jejunal tubes must be flushed with sterile water (5ml paediatrics, 2ml neonates oral/enteral (purple) syringe) using 'push, pause' technique:

- Prior to and after each feeding session
- Prior to and after administration of medications
- 6 hourly when tube not in use

STOP the feed if any possible displacement of tube:

- Retching.
- Vomiting milk.
- Excessive coughing.
- Respiratory distress.
- Measurement at nostril is different.

Safe use of a nasojejunal tube



Gastrostomy

A gastrostomy is a surgical opening through the skin of the abdomen to the stomach. A feeding device is then put into this opening so feed can be delivered directly into the stomach, bypassing the mouth and throat. This is a much safer method of enteral feeding and is mostly used with patients who require long-term enteral nutrition.

As well as being used for feeding and medications, a gastrostomy can also allow gas to be 'vented' from the stomach to reduce bloating or to drain stomach contents.

Gastrostomy devices must be checked before administration of anything via the tube and if there is any evidence of dislodgement of the device. Indications of this may include unusual leakage, unusual redness or swelling around gastrostomy site, excessive vomiting or abdominal distension / pain.

Gastrostomy tubes can be confirmed to be safe to use by aspirating using an oral/enteral (purple) syringe and testing the gastric contents. **The pH should be ≤5.5 as with nasogastric and orogastric tubes**.

There are two types of gastrostomy tubes – a **Percutaneous Endoscopic Gastrostomy (PEG)** or a **Balloon Gastrostomy (Button).**

A **PEG** consists of an external tube that is always connected to the child, and kept in place with an external and/or internal fixation device.

A **Button** is a more discreet device and is only used in well-established gastrostomy stomas. They usually consist of an external stabiliser and a balloon to keep the device in place. There are two ports on the button – the side port is to inflate/deflate the balloon, and the central valve is for connecting the appropriate extension set to allow feeding and medication to be given. Unlike a PEG, a button can be replaced without a general anaesthetic.

When PEG tube is not in use, the adapter end should be clamped.

When Button tube is not in use, the extension set should be removed, flushed through with sterile water and kept in a clean container until next use. Extension sets should be replaced as per manufacturer's instructions – usually every one or two weeks.

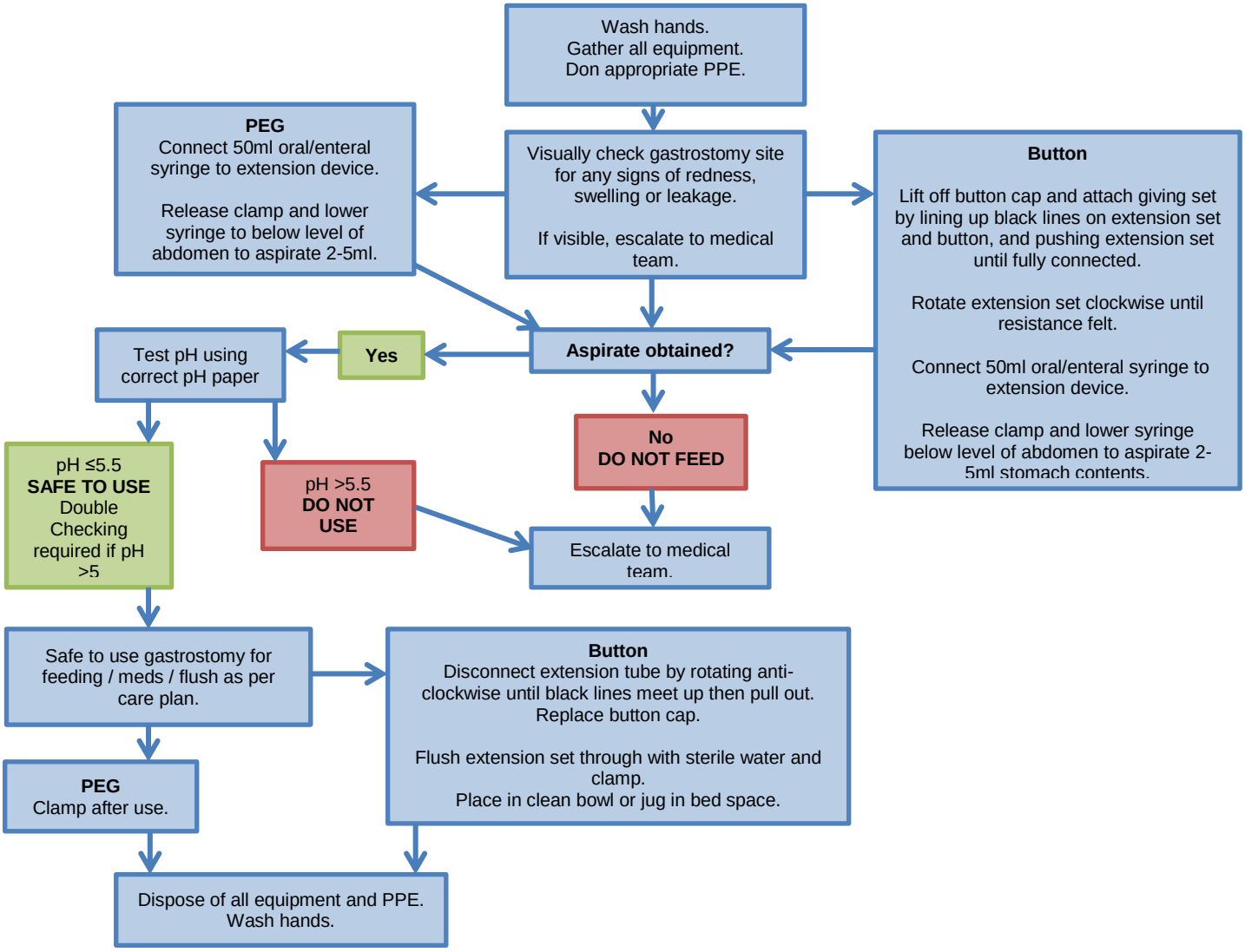
The skin around the gastrostomy opening should be cleaned every day. Once it has healed fully, this can be done in the shower or bath and patted dry with a towel. Do not rub or use special cleaning solutions or 'wipes' as this may irritate the gastrostomy. Daily checks of the skin around the stoma opening should be done to check it is not sore or infected.

PEG – Do not adjust triangle for first 10 days after operation. After, adjust for bloating or weight gain. Advance and turn device **once a week**. Usually left in situ for up to 2 years then changed.

Button – Water in balloon should not be removed or changed for the first 6 weeks after procedure. Device is usually left in for 3 months then changed.
Button device should be rotated **daily** to prevent granulation of tissue. Check the balloon volume of **water once a week** by deflating it then re-inflating with correct amount of water as per manufacturer's instructions.

It is very unlikely that gastrostomy devices will fall out. In the case that a tube does become dislodged or removed, insert a spare tube or device of similar size into the stoma opening immediately to stop it closing

Safe use of a gastrostomy device



Peg-jejunal tubes

The PEG-J device is useful for children who, for a variety of reasons cannot tolerate gastrostomy feeds, or are in danger of aspiration.

The jejunal tube is fed through the PEG tube. The external appearance therefore is of one tube exiting the stoma. There is a Y-connector providing both gastric and jejunal access.

The gastric port is useful for administration of medicines and for decompression of the stomach. The jejunal port is for administration of feeds. The feeds via jejunal tubes should be **continuous**, e.g. overnight, and must never be given as bolus feeds due to the risk of 'dumping' syndrome.

Gastrojejunal devices should not be rotated.

Appendices

APPENDIX 1- Nasogastric Tube Management and Enteral Feed Check Record Paediatrics

Affix Patient Label here or record

Name: .....

NHS No:

Hosp No:

D.O.B: D D / M M / Y Y Y Y Male Female

Ward:..... Cons:.....

NASOGASTRIC TUBE MANAGEMENT AND ENTERAL FEED CHECK RECORD

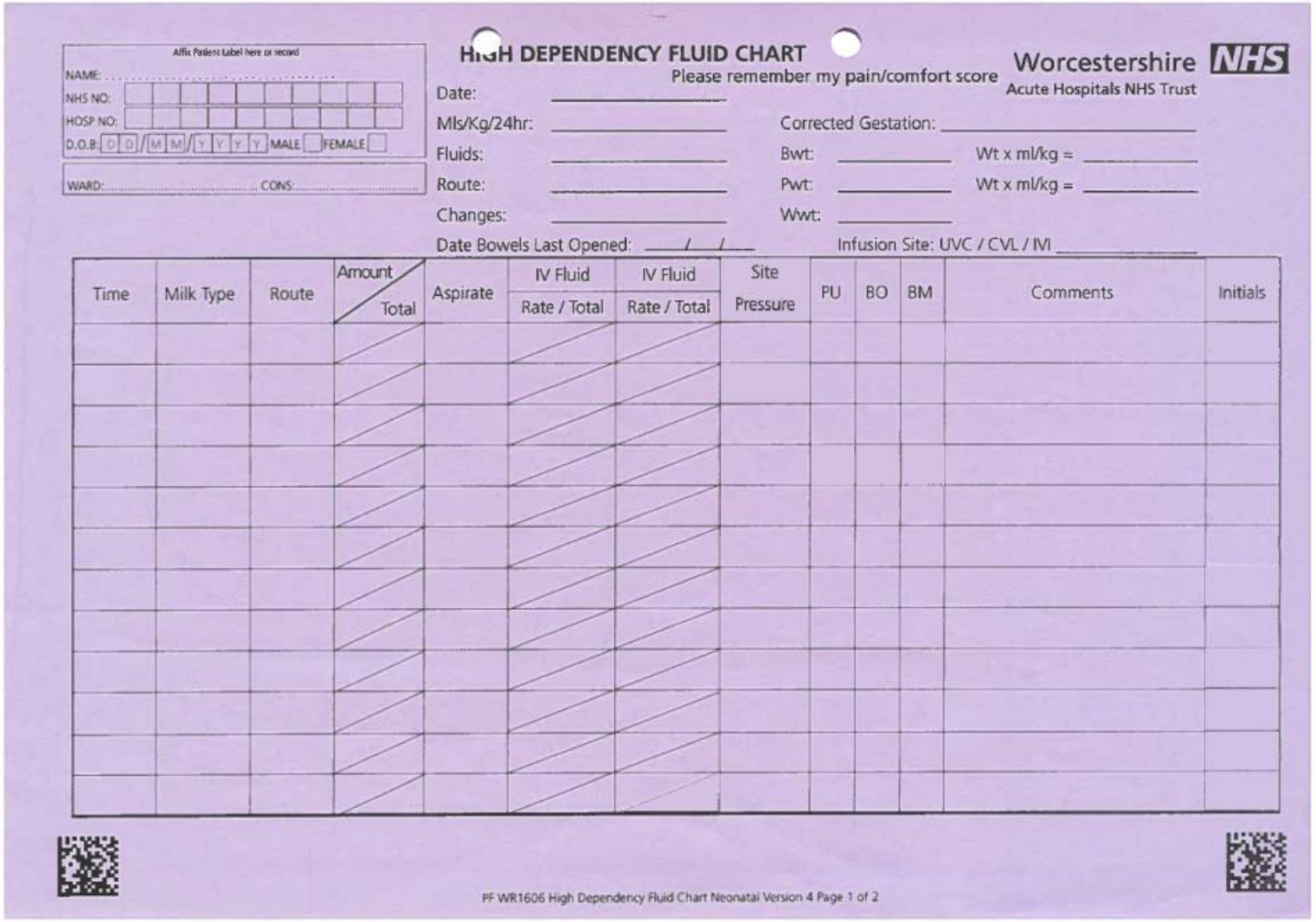
NHS Worcestershire Acute Hospitals NHS Trust

All NG tubes must be checked for correct position as follows (this involves aspirating and pH testing):

(A) Routine check at least every 24hrs. (4-6hrs for patients at greater risk of aspiration).
(B) Starting a new bag of feed.
(C) Administration of medication.
(D) Patient complained of discomfort of feed reflux into the throat or mouth.
(E) Evidence of coughing or shortness of breath whilst feeding.
(F) Patient vomited / has violent retching / severe coughing bouts
(G) Following endotracheal tube or tracheotomy suctioning
(H) The length of the visible portion of the NG tube is noticeably longer.
(I) The measurement on the tube is not the same as the measurement originally recorded
(J) Other - please provide the reason

Date						
Time						
NG tube still indicated (Yes / No)						
Reason for pH testing (see codes above)						
pH result (acceptable range is 5.5 or less. Be mindful of medication that can alter the pH value)	pH=	pH=	pH=	pH=	pH=	pH= .....
Position of NG - cm at nostril Please compare with Insertion record	.....cm	.....cm	.....cm	.....cm	.....cm	.....cm
Tube fixation clean and intact (yes / No)						
Nasal area Checked for erosion (Yes / No)						
Patient observations stable (Yes / No)						
30 - 45 degrees Semi-recumbent patient position maintained to aid feed absorption (Yes / No / N/A)						
NG tube flushed with sterile water (NG tube can only be flushed following verification of placement) (Yes/ No / N/A)						
Feed check (if applicable). Correct feed Correct rate (Yes/ No / N/A)						
Name and Title of Practitioner (Print)						
Signature of Practitioner						
Second checker signature						

APPENDIX 2 – Neonatal fluid balance chart



Affix Patient Label here or record

NAME: .....

NHS NO:

HOSP NO:

D.O.B: D D / M M / Y Y Y Y MALE ☐ FEMALE ☐

WARD: ..... CONS: .....

HIGH DEPENDENCY FLUID CHART

Please remember my pain/comfort score

Worcestershire NHS
Acute Hospitals NHS Trust

Date: _____

Mls/Kg/24hr: _____ Corrected Gestation: _____

Fluids: _____ Bwt: _____ Wt x ml/kg = _____

Route: _____ Pwt: _____ Wt x ml/kg = _____

Changes: _____ Wwt: _____

Date Bowels Last Opened: ___/___/___ Infusion Site: UVC / CVL / IVI _____

Time	Milk Type	Route	Amount / Total	Aspirate	IV Fluid Rate / Total	IV Fluid Rate / Total	Site Pressure	PU	BO	BM	Comments	Initials

PF WR1606 High Dependency Fluid Chart Neonatal Version 4 Page 1 of 2

APPENDIX 3 - Oral / Enteral Feed Record Sheet

Worcestershire NHS
Acute Hospitals NHS Trust

Please Affix Patient Label Here

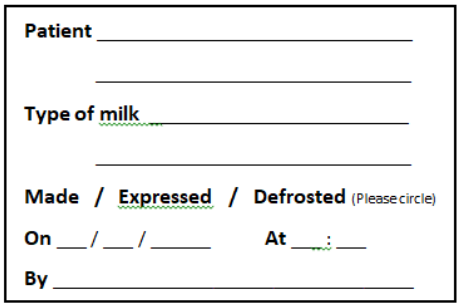
Oral/Enteral Feed Record Sheet

Feed Type: _____

Mls/Kg: _____

Date	Time	Feed Type	Expiry Date	Set Changed Yes/No/n/a	Sign	

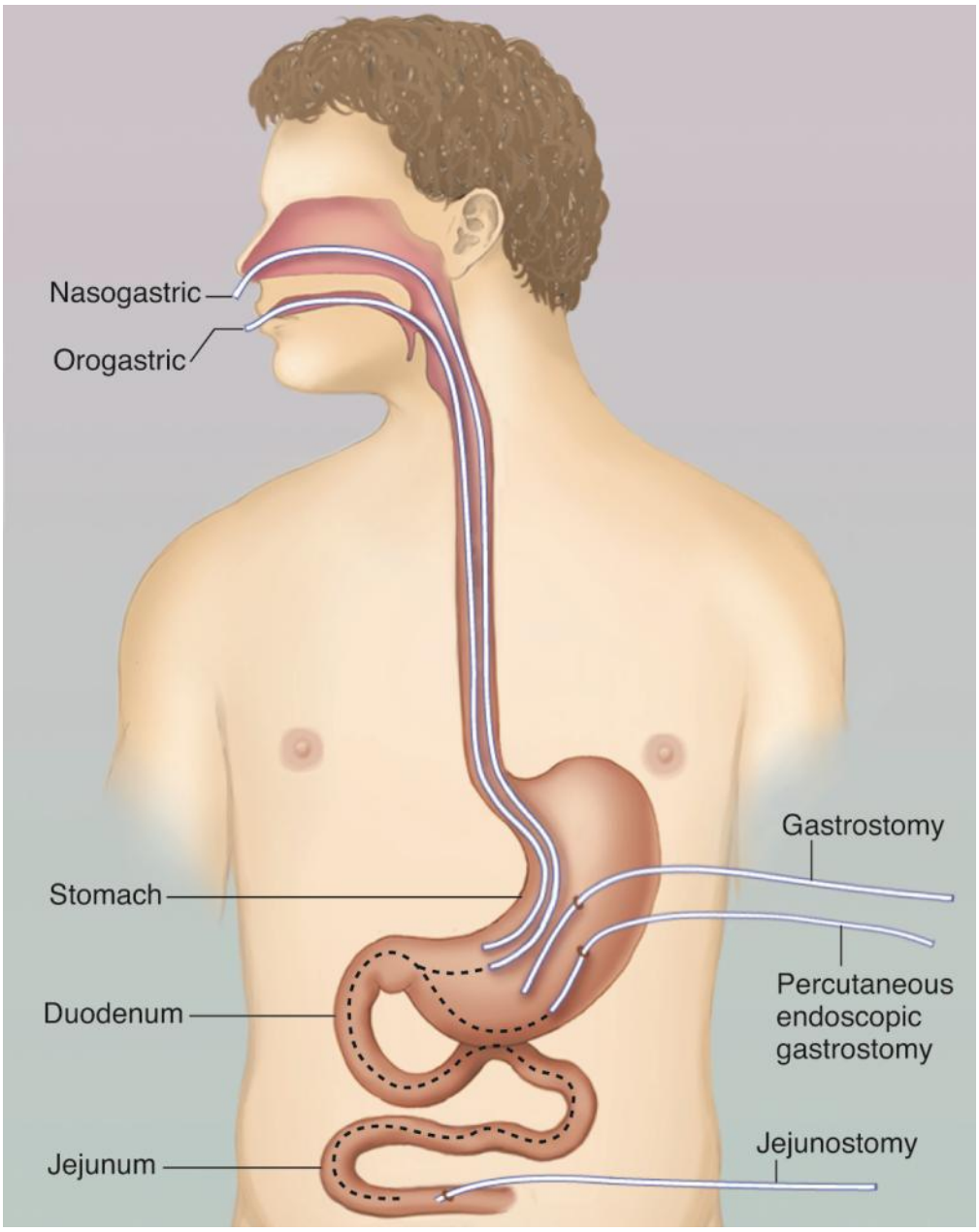
APPENDIX 4 - Milk labels



APPENDIX 5 - Discharge Checklist

- Parents/carers must be deemed fully competent to use and care for nasogastric tube as per competency documents.
- Discharge arrangements made with relevant community nursing team (Orchard / Neonatal Outreach). Supply parents/carers with relevant contact number for community team and ward.
- Feeding and/or medication regime is established and arranged by dietitian and medical team.
- If needed, enteral feed pump is given by dietitian team for patients to take home.
- Ward should provide at least 7 days of equipment (syringes, giving sets etc.) and feed.
- Spare NG tube to be sent home with patient.
- Completed EDS or Badger Discharge letter with instructions for GP to continue specialist milk if appropriate.
- TTOs if applicable, i.e. specialist milk, medications, etc.

APPENDIX 6 – Diagram of enteral tube positions



Monitoring

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the Policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	These are the 'key' parts of the process that we are relying on to manage risk. We may not be able to monitor every part of the process, but we MUST monitor the key elements, otherwise we won't know whether we are keeping patients, visitors and/or staff safe.	What are we going to do to make sure the key parts of the process we have identified are being followed? (Some techniques to consider are; audits, spot-checks, analysis of incident trends, monitoring of attendance at training.)	Be realistic. Set achievable frequencies. Use terms such as '10 times a year' instead of 'monthly'.	Who is responsible for the check? Is it listed in the 'duties' section of the Policy? Is it in the job description?	Who will receive the monitoring results? Where this is a committee the committee's specific responsibility for monitoring the process must be described within its terms of reference.	Use terms such as '10 times a year' instead of 'monthly'.

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Worcestershire Acute Hospitals NHS Trust. *Nursing procedure for teaching parents how to administer naso-gastric tube feeds at home.* **Awaiting publication**

Worcestershire Acute Hospitals NHS Trust. *Paediatric nasogastric competency framework for parents / carers.* **Awaiting publication**

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Contribution List

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Louise Williams, Neonatal and Paediatric pharmacist
Dawn Forbes, Paediatric Oncology Specialist Nurse
Cathy Pollard, Paediatric Dietitian.
Debbie Bolt, Orchard Community Nursing Team Manager
Neonatal Outreach Service

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee
Paediatric Quality Improvement meeting
Medicines safety Committee

Supporting Document 1 - Equality Impact Assessment Tool

. To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form on next page;

NHS
Worcestershire
Acute Hospitals
NHS Trust

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust		Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
Date assessment completed			

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title:**			
What is the aim, purpose and/or intended outcomes of this Activity?				
Who will be affected by the development & implementation of this activity?	❑ ❑ ❑ ❑	Service User Patient Carers Visitors	❑ ❑ ❑ ❑	Staff Communities Other _____

Is this:	❑ Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	
Summary of relevant findings	

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age				
Disability				
Gender Reassignment				
Marriage & Civil Partnerships				
Pregnancy & Maternity				
Race including Traveling Communities				
Religion & Belief				
Sex				
Sexual				

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Orientation				
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)				
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)				

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
		.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)				

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the

diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	
Date signed	
Comments:	
Signature of person the Leader Person for this activity	
Date signed	
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	**Yes/No**
1.	Does the implementation of this document require any additional Capital resources	
2.	Does the implementation of this document require additional revenue	
3.	Does the implementation of this document require additional manpower	
4.	Does the implementation of this document release any manpower costs through a change in practice	
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.