University Hospitals of Leicester NHS
NHS Trust

INSERTION AND MANAGEMENT OF NASOGASTRIC AND OROGASTRIC TUBES IN NEONATES, INFANTS, CHILDREN AND YOUNG PEOPLE

POLICY AND PROCEDURES

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Contents

REVIEW DATES AND DETAILS OF CHANGES MADE DURING THE REVIEW

December 2023:
Updated LocSSIP and checklist
Removed NG placement confirmation sticker
Added new appendix, care plan for management of pH consistently 6 or above

KEY WORDS

Aspirate, Chest X-ray, Enteral Nutrition, Enteral syringe, Gastric, Guidewire, NEX measurement, pH

1. INTRODUCTION AND POLICY AIMS

1.1 This document sets out the University Hospitals of Leicester (UHL) NHS Trusts Policy and Procedures for the safe insertion, assessment and on-going care of enteral feeding tubes used in neonates, infants, children and young adults (up to the age of 16 years to include patients over the age of 16 years being cared for in a paediatric setting).

1.2 If the patient is aged 16 years or older and is being cared for in an adult setting please refer to the **Nasogastric and Orogastric Tubes in Adults UHL Policy** (B39/2005)

1.3 Nasogastric feeding is frequently used within UHL Trust and many NGT/OGT are passed daily without incident. There is however a risk of tubes being misplaced either during initial insertion or subsequently whilst in situ. If misplacement does occur and is not recognised, potentially serious patient harm or death could occur, this type of incident is a "never event".

1.4 There has been guidance available since 2005 from the National Patient Safety Agency (NPSA, 2005, updated 2019) (Now NHS Improvement) stating the risk of fluid, medicines or enteral nutrition being administered via a misplaced NGT/OGT. The more recent guidance from NHS Improvement has been available since 2016 (updated 2019). UHL Policy since this time has been based on these recommendations.

1.5 The majority of NGT/OGT's are placed in ward clinical areas at the bedside. NGT/OGT's are also inserted in theatre, radiology, and endoscopy or with the use of a laryngoscope for direct vision. The insertion section of this policy relates to bedside placement of a NGT/OGT only.

1.6 This policy aims to provide clear guidance on the NGT/OGT insertion, confirmation of gastric placement and on-going care for both the Neonatal Unit (NNU) and the Children's Services at UHL.

2. POLICY SCOPE

2.1 This policy and its supporting procedures aim to support staff in the ongoing management of nasogastric tubes (NGT) and orogastric tubes (OGT) in all neonates, babies, children and young people cared for within UHL Children's Hospital and the Neonatal Unit by:

- Providing clear directives for the safe and effective placement of NGT/OGT in all patients.
- Providing clear directives for the safe checking procedures for NGT/OGT management.

- Ensuring NGT/OGT feeding or drainage is incorporated into the patient's care plan.

2.2 This policy applies to all healthcare staff who insert a NGT/OGT or confirm gastric placement and all registered, non-registered and pre-registration professionals who care for patients with a NGT/OGT tube.

2.3 This policy applies to pre-registration student nurses, student midwives and trainee nursing associates caring for these patients whilst under the direct supervision of their practice supervisor/assessor.

2.4 This policy applies to patients and informal carers i.e. those individuals who have undertaken daily care regimens for the child on a routine basis and have been appropriately trained by a competent registered practitioner to care for an NGT/OGT.

2.5 Patients may be transferred out of UHL NHS Trust with a NGT/OGT in situ. Post discharge the responsibility of ongoing care-planning moving forward lies with the provider Trust.

3. DEFINITIONS AND ABBREVIATIONS

Enteral Nutrition (EN): the delivery of nutrition via the gastrointestinal trach involving an enteral feeding tube.
Home Enteral Nutrition Service (HENS): Community Dietitians (Leicestershire Partnership Trust) who support patients at home receiving enteral tube feeding.
Nasogastric tube (NGT): a tube passed through the nose into the stomach.
Nasojejunal tube (NJT): a tube passed through the nose into the stomach and then advanced into the small bowel, to allow post-pyloric feeding.
NEMU: Nose to Earlobe to a point halfway between the Xiphisternum and the Umbilicus
NEX: Nose to Earlobe to Xiphisternum.
Orogastric Tube (OGT): a tube passed through the mouth into the stomach.

CMG: Clinical Management Group
CXR: Chest X-Ray
LCAT: Leicester Competency Assessment Tool
LocSSIP: Local Safety Standard for Invasive Procedure
NPSA: National Patient Safety Agency

4. ROLES AND RESPONSIBILITIES

4.1 The **Executive Leads** are the Chief Nurse and Medical Director.

4.2 CMG Heads of Nursing, Deputy Heads of Nursing and Matrons alongside Head of Service are responsible for ensuring adequate staffing levels of trained and competent clinical staff that can insert NGT/OGT and care for patients with NGT/OGT and those receiving enteral nutrition.

4.3 Medical Staff/Competent Clinician are responsible for;

a) Identifying suitable patients for NGT/OGT insertion and referring those that are not suitable to an appropriate team
b) Ensuring the decision to commence nasogastric feeding is based on the patient's nutritional status and goals of overall therapy and the decision is documented on the NGT/OGT care plan or medical notes as advised by NHS Improvement.

c) Delaying the placement of the tube if requested out of hours and there is not sufficient experienced support available to accurately confirm nasogastric tube placement at ward level e.g. staff are not confident/ competent in pH testing of NGT/OGT placement.
d) Ensuring that the NGT/OGT is not used unless placement is confirmed on an abdominal plan film X-ray if this is the only way to confirm correct placement.

4.4 Radiographers/Radiologists/Radiology Advanced Practitioners perform an x-ray ensuring the length of the tube can be viewed as per this policy, ensuring they can demonstrate competency around confirmation of gastric placement by x-ray.

4.5 Ward Sisters/ Charge Nurses are responsible for ensuring development on the ward or unit of appropriate numbers of competent staff and responsible for on-going monitoring that staff are maintaining competency.

4.6 Registered Nurses/Midwives/Nursing Associates are responsible for;

a) The individual care of patients with NGT/OGT and ensuring that the care they provide is in line with UHL policies and procedures.
b) Ensuring they can demonstrate competency in the insertion of a NGT/OGT, and confirmation of gastric placement by pH testing, administering prescribed feed and water flushes as per the Dietitian's regimen and as per this policy's instructions.
c) Liaising with the Home Enteral Nutrition Service (HENS) and Community Nursing team prior to discharging patients from the Children's Hospital. Liaising with the Neonatal Outreach team prior to discharging patients from the Neonatal Unit.
d) Ensuring the NGT/OGT insertion, initial and on-going position checks and care are provided as detailed in this Policy and Procedures and the tube is not used unless gastric placement is confirmed.
e) Delaying the placement of the tube if requested out of hours and there is not sufficient experienced support available to accurately confirm nasogastric tube placement at ward level e.g. staff are not confident/ competent in pH testing.
f) In the event that a patient required Enteral Nutrition and the ward is not familiar/competent with the care of the Enteral Nutrition patient the nurse is responsible for escalating this as an incident to the senior nurses in the Clinical Management Group.
g) Acting immediately to remove misplaced tube in clinical area or on receipt of misplaced tube on an x-ray.

4.7 Dietitians are responsible for:

a) The nutritional assessment of the patient for nasogastric enteral tube feeding including aspects of growth monitoring, biochemistry, clinical, diet, and allergy status and drug nutrient interactions with implications for the enteral tube feed.
b) Formulation of the patient's nasogastric enteral tube feeding regimen including feeding/feed solution(s) to be used, administration method e.g. the pumps and/or bolus, rate of administration, additional vitamins and minerals required, water flushes.
c) Clinical monitoring of the patient on the nasogastric enteral tube feed e.g. growth, blood biochemistry, toleration of feed and adjustment of the enteral feeding regimen accordingly.
d) Weaning plans e.g. to come off nasogastric enteral feed onto oral feeds and or diet. Weaning plan can also include parenteral nutrition infusion being reduced and increasing nasogastric enteral feeding plan with/without Pharmacy input.
e) Discharge ICE letter to the GP regarding the patient's clinical nutritional status and nasogastric enteral feeing plan.

f) Referral of the patient to the Community Dietitians and/or the local Home Care Company for delivery of ongoing supplies of feed and equipment. Liaising with other key parties and agencies such as the Diana team.

4.8 Pharmacists are responsible for ensuring that medications are in correct formulation to be administered safely via the enteral feeding tube and to document instructions for staff/patient/carers on the medication chart.

4.9 Student Nurses/ Student Midwives and Trainee Nursing Associates are responsible for;

a) Reporting any patient changes or problems with the enteral feeding tube to a registered professional.
b) Administering prescribed feed and water flushers as per the Dietitian's regimen and as per this policy's instructions under direct supervision of a registered professional.
c) Liaising with the Nurse in Charge in the first instance if there are problems or questions relating to the enteral feeding tube.
d) Following UHL policy when caring for a patient with an enteral feeding tube.

4.10 Health Care Assistants and Nursery Nurses are responsible for;

a) Ensuring they have completed the specific competency training with corresponding assessment
b) In the Children's Hospital all HCA's must get all pH test checked by a registered professional prior to commencing any feeds and this must be recorded on the feed chart of fluid balance chart.
c) The HCA's and Nursery Nurses are responsible for reporting any patient changes or problems with the enteral feeding tube to the registered professional
d) Nursery Nurses on the Neonatal Unit can insert NGT/OGT tubes if they have completed the Neonatal specific competency training with corresponding assessment and have documentation that this care have been authorised by their immediate Ward Sister/ Charge Nurse/Unit Manager.

4.11 Prescribers are responsible for;

a) The prescription they sign and for their decisions and actions when they supply and administer medicines and devices or authorise or instruct others to do so.
b) Enteral feeds can be prescribed by any professional who is authorised/ qualified to do so i.e. Doctor, Dietitian, and Non-Medical Prescriber.

4.12 All UHL staff are responsible for informing relevant managers and clinical leads if there are any implementation or compliance issues with newly developed policies or guidance and for participating in the monitoring of compliance as applicable.

5. DECISION TREE & RISK ASSESSMENT FOR NGT/OGT PLACEMENT CHECKS IN NEONATES, INFANTS, CHILDREN AND YOUNG PEOPLE

PRIOR TO INSERTING AN ENTERAL FEEDING TUBE:

- An assessment MUST be made to identify if it is appropriate for the patient (see point 4.3)
- Appropriately prepare the patient and/or parent/carers to have an enteral feeding tube placed
- Estimate the length that the tube needs to be inserted using the NEX measurement for Infants, Children and Young People, or the NEMU measurement for Neonates. (see appendix 1)
- Once inserted, secure the tube safely with hypoallergenic tape & hydrocolloid dressing.
- Aspirate using the correct size/type of enteral syringe (20 ml for NNU, 60ml for Children's Hospital).
- You **MUST NOT** use the tube until the position has been confirmed with pH testing of gastric aspirate.
- If confirming a tube already in use – Gently insert 1-2ml air to free feeding ports of mucosa, debris, water and feed.

Aspirate Obtained

YES

pH 6.0 or above

DO NOT FEED!

Check the external tube length is the same as previously documented if there are obvious signs of displacement reposition & re-aspirate

Increase gastric secretion dummy sucking, change position of infant, increase activity, wait a further 15 minutes

Offer oral drink or fluid containing food colouring i.e. sugar free juice if appropriate

Be aware that some medications can elevate pH readings – it may therefore take an hour post-medication for gastric pH to rise

IF pH REMAINS 6.0 or ABOVE DO NOT FEED

CONSIDER –

Replacing or Re-passing tube
Reviewing medication
Refer to senior medical team & dietitian
Review trend of previous pH values
Amount and type of aspirate obtained
Is child showing signs of respiratory distress now or during previous feeds?

Special considerations

Reduced conscious level/gag reflex
Mechanical ventilation
Chronic cough
Difficulty experienced when passing tube

pH 1 - 5.5

PROCEED TO FEED OR USE TUBE

Record results in notes and in bedside documentation before using tube.

IF UNSURE DO NOT FEED OR USE TUBE!

CALL FOR SENIOR MEDICAL HELP

NO

DO NOT FEED!

Try these techniques to help gain aspirate:

- On initial insertion-advance/retract tube aspirating at 1cm intervals.
- If possible, reposition child on their left side.
- If possible, gently change child's position or encourage activity to stimulate gastric secretion.
- If appropriate – offer water orally or a dummy to infants.
- Give mouth care to patients who are nil-by-mouth.
- Wait 15-30 minutes before aspirating again.

IF STILL UNABLE TO OBTAIN ASPIRATE

- Consider that the tube may be blocked or misplaced
- Discuss with more experienced staff
- Consider removing or replacing the tube unless contra-indicated (e.g. after gastric surgery)
- Document decisions and rationale

Consider replacing the tube if appropriate or consider proceeding to x-ray; ensure reason for x-ray documented on request form

Competent clinician (with evidence of training) to document confirmation of NG tube position in stomach

6. POLICY STATEMENTS, STANDARDS, PROCEDURES, PROCESSES AND ASSOCIATED DOCUMENTS

6.1 Indications for NGT/OGT insertion

a) To provide an accessible and safe route to the gastrointestinal tract for fluid, medicines and nutrition, when the oral route is not appropriate.
b) To provide a suitable short-term alternative to deliver adequate nutrition when the patient is unable to take sufficient nutrition orally.
c) To allow drainage of the contents of the stomach when indicated.
d) To allow removal of air from the stomach when indicated.

6.1.1 It is important to maintain health and prevent deterioration in nutritional status as this may impair the ability to provide treatment. Nutritional support should be actively considered and assessed on a patients care plan. Paediatric dietitians should be involved if any concern is identified. All patients require their nutritional status assessed using the Malnutrition Score (PYMS) accessed through NerveCentre. Neonatal patients do not require this; however their nutritional status is assessed as a minimum daily.

6.1.2 Prior to placement of a NGT/OGT an assessment must identify that it is appropriate for the patient, considering any contraindications to placement. The rationale for any decisions must be recorded in the patient's medical notes.

6.1.3 Elective NGT/OGT placement for administration of enteral nutrition, fluid and/or medication must be delayed if there is not sufficient experienced support available to accurately confirm gastric placement. Unless clinically urgent, no elective NGT/OGT should be placed out of hours as this placement time correlates with a greater risk of complications to patients due to reduced staffing numbers.

6.2 Types of NGT/OGT use in clinical practice

6.2.1 In line with national guidance NGT/OGT's used for administration must be radio-opaque along their entire length, be CE marked and have external visual length markings and must be Enfit compliant (ISO 80369-3). All equipment used to administer fluid, medication and enteral feed should be used once and discarded in-line with manufacturers' guidelines and local policy.

6.2.2 The following table refers to the use of the *Medicina* tubes only, which are currently used in clinical practice in NNU and the Children's Hospital. If any other types of NGT/OGT are supplied – please refer to the manufacturer's guidance.

<table>
<tr><th>Medicina tubes only</th><th>Without Guidewire</th><th>With Guidewire</th></tr>
<tr><td>Material</td><td colspan="2">Polyurethane (PUR)</td></tr>
<tr><td>Size
<table>
<tr><th>Patient</th><th>Standard feeds</th><th>High density feeds</th></tr>
<tr><td>Neonates</td><td>4 - 5 FR</td><td>6 FR</td></tr>
<tr><td>Children</td><td>6 FR</td><td>8 FR</td></tr>
<tr><td>Adults</td><td>8 - 10FR</td><td>12 - 14FR</td></tr>
</table></td><td>Diameters available:
4 FR – 14 FR

Lengths available:
40cm – 160cm</td><td>Diameters available:
6 FR – 14 FR

Lengths available:
55cm – 120cm</td></tr>
<tr><td>Use</td><td>Used to feed, flush, deliver medicine and to aspirate stomach contents.</td><td>Used to feed, flush and deliver medicine. Also contains a self-lubricated guidewire therefore no flushing required to remove the guidewire before confirmation of the tube.</td></tr>
<tr><td>Size of syringe to use for gastric sampling</td><td colspan="2"><u>Neonatal Unit</u>
Use 20 ml EnFit syringe for aspiration

<u>Children’s Hospital</u>
Use 60 ml EnFit syringe for aspiration for all PUR tubes (no smaller than a 20ml EnFit syringe)</td></tr>
<tr><td>Indwelling time</td><td colspan="2">Medicina have increased their indwelling time up to 90 days.

<u>Non Ventilated Patients</u>
Patient’s should be individually risk assessed and tube’s must be changed more frequently if signs of displacement or nasal erosion. It is recommended that NG placement should be reviewed every 28 days and NG replacement must be considered to change the nostril to prevent pressure damage.

<u>Ventilated Patients in Intensive Care</u>
Tubes are to be changed every 28 days. If patient safety is at risk due to clinical condition, this must be re-assessed within the MDT if delay in replacement is required.

<u>All Patient’s on NNU</u>
Tubes are to be changed every 7 days. If patient safety is at risk due to clinical condition, this must be re-assessed within the MDT if delay in replacement is required</td></tr>
<tr><td>Advantages</td><td colspan="2">• Polyurethane warms up with body temperature making the tubes softer and more comfortable for the patient
• Patient can eat and drink normally
• Useful short term, avoiding more invasive procedures i.e. gastrostomy insertion
• Two side eyes for feeding – still able to use if one gets blocked
• Guidewire – increases rigidity to help insert the tube – useful to try following unsuccessful attempts of inserting a tube without a guidewire, as well as for anesthetised/sedated patients.</td></tr>
<tr><td>Disadvantages</td><td colspan="2">• Can be difficult to aspirate
• May cause ulceration of the gastrointestinal tract
• May cause ulceration of the nasal tissue</td></tr>
</table>

PLEASE NOTE: Not all wide bore NGT/ Ryle's tubes can be used to feed, flush and deliver medicine as well as gastric emptying. Refer to manufacturer's guidance for more information. With regards to tubes required for gastric emptying/ gastric lavage/ patient's with paralytic ileus, gastrointestinal disease or have had gastrointestinal tract surgery please seek guidance from the medical/ surgical team responsible for the patient.

6.2.4 See Appendix 1 – for ***Procedure for Insertion of a Nasogastric Tube/Orogastric Tube in Neonates, Infants, Children & Young People***.

6.3 Confirming initial gastric placement

6.3.1 In the circumstance that an aspirate cannot be obtained or pH of the aspirate is not within the safe range, refer to the ***Decision Tree & Risk Assessment for NGT/OGT Placement Checks in Neonates, Infants, Children & Young People*** on page 7.

6.3.2 NGT/OGT **must not** be used to administer a flush, medication or enteral nutrition introduced to the NGT/OGT until gastric placement has been confirmed.

6.3.3 Initial gastric placement **must be** as follows:

a) First Line: pH testing, with a pH of between 0 – 5.5 as the safe range. Each test result must be recorded in the patient's notes.

b) Second Line: Chest X-ray (CXR) should only be undertaken when no aspirate can be obtained or pH is not within the safe range, and attempts have been made to resolve any difficulties in order to avoid frequent exposure to radiation.

6.3.4 All pH indicator paper must be CE marked and intended by the manufacturer to test human gastric aspirate. Paired (i.e. same manufacturer) indicator papers and pH scale gauges must be used to reduce the risk of false interpretation of results. Each test result must be documented on a chart kept at the patient's bedside. Non registered staff must have pH checked before commencing any feeds.

6.3.5 Occasionally NGT/OGT are placed under direct placement e.g. in endoscopy, radiology, theatre or under direct vision with a laryngoscope so that the tube can be confirmed as being in the stomach at the time of insertion. There is a risk of subsequent tube misplacement, especially when the guidewire is removed so gastric placement must be confirmed after guidewire removal.

6.3.6 "Whoosh" tests, use of litmus paper, or the interpretation of the appearance of the aspirate or absence of respiratory distress **must never** be used to confirm NGT/OGT position as they are not reliable.

6.3.7 Placement and confirmation of all initial NGT/OGT placements, both successful and unsuccessful, must be documented on the **'Invasive Procedure Safety Checklist: NG Tube Insertion (**appendix 5**) and** placed in the medical notes for each new NGT/OGT inserted in the Children's Hospital and NNU. This is a Local Safety Standard for Invasive Procedures (LocSSIP) see Appendix 4.

6.4 Confirmation of ongoing gastric placement

6.4.1 There is a risk that a NGT/OGT can become misplaced whilst in use. Gastric placement must be reconfirmed by pH testing or x-ray in the following circumstances:

a) If the patient is vomiting, retching, coughing or has any new respiratory symptoms i.e. increased mucous production, reduction in oxygen saturations.

b) If there is evidence of tube displacement, the length of the NGT/OGT at the nose should be documented (using externally visible length markings on the tube). The measurement should be checked prior to each use. If the measurement has changed the gastric placement must be reconfirmed.

c) Prior to every use e.g. recommencing feed after a rest period, administration of fluid/medication when continuous enteral feed is not running. It is recommended that gastric placement is confirmed by pH testing at least once in any 24 hour period whilst a NGT/OGT remains in situ, unless the patient is on a continuous enteral feed.

6.4.2 All pH recordings must be inputted onto a fluid balance chart or a HDU/ITU chart before administering any fluid, medicine or feed. A registered professional must also sign the chart when confirming pH if carried out by non-registered professional.

6.5 Altered gastric pH readings

6.5.1 Gastric pH may also be altered due to certain medication that may be administered e.g. protein pump inhibitors such as lansoprazole/omeprazole, or H2-Receptor antagonists such as ranitidine. These types of medication can elevate gastric pH readings and can take an hour post administration to occur.

6.5.2 The gastric pH may be altered for patients requiring a continuous NGT/OGT feed due to presence of feed already in the stomach (See part 6.7.4).

6.5.3 Milk feeds may also give a false reading of gastric pH, it is important to ensure adequate flushing after feeds and appropriate timings between feeds. See below examples of some of these feeds (Please note: this is not an exhaustive list):

Name of feed	**pH of feed**
Nutrini Peptisorb	pH 4
Nutrini Peptisorb Energy	pH 4
Infatrini Peptisorb	pH 6
Peptamin Junior	pH 6
Pepti Junior	pH 6
SMA Pro High Energy	pH 6

6.5.4 The NGT/OGT must be cleared before aspirating the tube by inserting 1-2ml of air, to prevent an inaccurate pH reading when sampling due to some feeds having a low pH of 2.8 – 4.0 e.g. feeds flavoured with SHS and Expressed Breast Milk.

6.5.5 For individualised care plan for children with a pH consistently 6.0 or above, please see appendix 3.

6.6 Confirming tube placement by X-Ray

6.6.1 Principles of using an x-ray to determine confirmation of tube placement, the x-ray:

- Clearly indicates that its purpose is to confirm tube placement for administering fluid, medication and/or feeding.
- Is only accurate at the time it is taken and cannot be used for ongoing confirmation.
- Will not be taken until the guidewire is removed from the NGT/OGT to demonstrate the tip is not curled.

6.6.2 X-rays must only be interpreted and NGT/OGT position confirmed by a competent clinician who must:

- Take responsibility to ensure the tube can be clearly seen on the x-ray.
- Document the tube placement checking process, to include the following:
    - The most current x-ray is viewed for the correct patient
    - How the x-ray was interpreted to confirm tube placement
    - Clear instructions as to required actions

PLEASE NOTE: The x-ray will not be reviewed immediately by the Radiologist, therefore the medical/surgical team are responsible for checking, interpreting and documenting the x-ray once it is available. This should be completed by a competent medical clinician.

Documentation of the x-ray should include:

a) Does the tube clearly bisect the carina or the bronchi?
b) Does the tube cross the diaphragm in the midline?
c) Is the tip clearly visible below the left hemi-diaphragm?
d) Give clear instructions as to whether the tube is safe to use or if other actions are required.

Ensure clear and consistent information is documented in the medical notes of the x-ray interpretation and results using the criteria above.

6.6.3 If the competent clinician is unable to confirm gastric placement using the criteria above they should contact the plain film hot reporting hub. Out of hours they should contact the 24 hour on-call Radiologist for an immediate report or expert advice.

6.6.4 Department based x-ray:

- In the event that the tube appears misplaced, consider whether adjustment or removal is required.
- If the tube is misplaced, but cannot be removed or adjusted before the patient returns to the ward, the tube must be marked detailing this. For e.g. place a label at the end of the tube which states ‘Do not use, incorrect position’.
- If the tube is misplaced the patient is becoming compromised by this then the Radiographer must summon urgent help to get the tube removed immediately.

6.6.5 Ward based x-ray:

In the event the tube appears misplaced on initial Radiographer review, it is the responsibility of the Radiographer to inform the nurse looking after the patient of the misplaced tube and explain it is not in the correct position and cannot be used for feeding.

6.7 Administering fluid, medication and feed via NGT/OGT

6.7.1 Confirmation of correct tube placement via pH testing or x-ray is required before any fluid, medication or feed can be administered.

6.7.2 Due to associated risk of complications of administering fluid, medication or feed via a NGT/OGT, it is imperative that it is determined as the most appropriate route prior to administration.

6.7.3 Medication administration via NGT/OGT

All medicines must be prescribed and administered as per the Leicestershire Medicines Code. All staff involved in the medicine process from prescription, preparation, checking and administration must be deemed competent to do so in line with UHL policy. Key points as follows:

- All medication prescribed via NGT must be prescribed as such on the prescription chart.
- Where possible medication should be dispensed as a liquid/solution.
- If medication is not in liquid form, check solubility with the pharmacy team as certain tablets should not be crushed e.g. if they are enteric coated, modified/slow release or cytotoxic preparations. As large particles or insoluble preparations may block the tube, resulting in the need for tube replacement.
- The medicines must not be added to the milk feeds as there is a risk of the feed not being completed therefore a risk the medicine will not be administered in its entirety.
- If there is any concern about the absorption of medications administered via the NGT/OGT you MUST consult the pharmacy team.

6.7.4 Feed administration via NGT/OGT

All patients receiving NGT/OGT feeds must have a daily feeding plan with consideration to their fluid and nutritional requirements.

- If milk or enteral feed is not the usual source of nutrition the patient must be referred to the dietetic team to assess and provide a feeding plan with agreement from the medical team prior to commencing feeding.
- NGT/OGT feeds may be administered intermittently as a bolus or via a rate controlled feeding pump which is given up to 20 hours per day with a rest period before commencing the next feed (unless when establishing feeds this will be 24 hours per day initially). pH must be tested prior to commencing feed and during a break. A minimum of a 1 hour break from feeding/administration is recommended before pH is rechecked.

- Neonates/infants on a continuous NG feed (without a break) would need a pH check prior to commencing the feed, however as the stomach will never be empty of feed any ongoing pH checks will be elevated. It is vital to check the external tube marking for displacement every 4-6 hours. Documenting findings and if any adjustments were required.
- Unless contraindicated children should be fed at a 30-45 degree angle to aid digestion. The prone position should not be used as this can increase the risk of aspiration. Babies on NNU can be nursed prone when receiving feeds via NGT/OGT it they are on continuous monitoring.

Shelf-life of feeds

- Expressed breast milk when stored in hospital:

Method	Length of time
Room temperature: 19°-23° C	6 hours – covered Baby on NNU 4 hours
Refrigerator 2° - 4°	In hospital – 48hrs At home – 5 days
Freezer compartment in domestic fridge	2 weeks
Deep freeze	3 months if baby on NNU 6 months otherwise

- Pre-packaged feeds from a manufacturer:
    - Once opened can be used for a maximum of 24 hours (if set up via a pump)
    - Administration sets must be changed every 24 hours (clearly label to indicate when to change).
    - Feeds decanted into a bottle or container can be used for 4 hours only.

- Feeds are made by the milk kitchen:
    - Keep in fridge for 24 hours and then discard
    - Formula milk is now made up for each feed. If it is powdered or 'ready-made' it is best to follow the manufacturer's guidelines on storage (typically 24 hours).

6.8 Tube maintenance

6.8.1 Tube cleaning

The access port to the tube should be cleaned daily with mild soap and water and then dried. Particular attention should be paid to the internal threads of the purple ENfit connector. This should be flushed thoroughly with enough water to remove any debris. Dressings or any fixation materials should be changed daily, unless there are concerns with the skin integrity and the dressing remains clean and intact.

6.8.2 Tube placement

If a tube has visibly moved more than a few centimetres, then it should be removed and a new tube should be passed. It is not recommended that the tubes are re-passed if they became displaced (as per manufacturer's recommendations). Older

tubes pose a risk of infection and should be replaced. It is important never to re-introduce a guidewire into a tube which is still in the patient.

6.8.3 Tube patency

Regular tube flushing is required to avoid the tube from becoming blocked. Flushing should be every 4-6 hours when feeding, and every 8 hours if the tube is not in use. In addition the tube should be flushed before and after medicines and before and after feeds.

The tube must be flushed with sterile water (Labelled with time/date of opening. To be discarded after 24 hours).

The amount of flush is to be determined by the priming volume of the tube (see manufacturer's guidance for suitable volumes) or as per dietitian's feed plan. Care should be taken with fluid restricted patients. **In NNU – NGT/OGT's are not to be flushed.**

6.8.4 Blocked tubes

If a tube becomes blocked, make sure the external tube is not kinked. Use water to attempt to flush the tube, if this fails, try fizzy water. If blockage persists, consider replacing it. Attempting to flush a blocked tube may result in a tube splitting, resulting in potential damage to the surrounding structures or aspiration of fluid if excessive force is used.

6.9 Patient considerations

6.9.1 Prior to commencing a NGT/OGT feed:

Complete an ABCDE assessment to ensure it is appropriate to administer. If any concerns escalate accordingly.

During a feed monitor for any changes in the patient's condition, observe for any changes and monitor for any signs of respiratory distress.

Feeds must be stopped immediately if any coughing, gagging, vomiting or signs of respiratory distress and must not be recommenced until the tube position is confirmed.

6.9.2 Fluid Balance

- All fluid intake (enteral, oral) and fluid output (vomit, urine, stool, NGT/OGT aspirate pH) must be recorded on a fluid balance chart or HDU/ITU chart, including description and volume.
- Check the tube to ensure it remains intact (no signs of leakage or tears) to ensure safety when feeding and to prevent loss of fluid
- All infants and children receiving enteral nutrition must be weighed twice weekly unless otherwise directed

6.9.3 Tube trauma

Monitor for signs of the following:

- Bleeding, soreness or culvers visible in the nasal cavity or the cheek
- Coughing or vomiting blood stained fluid (observe for increase in swallowing action)
- Skin integrity compromised by adhesive or tube pressure

The following Nerve Centre documentation must be completed as per UHL policy:

- SSKIN Bundle
- UHL Pressure Ulcer Risk Assessment
- BEST SHOT
- Wound assessment and care plan (if applicable)
- Incident form (Datix) if pressure area grade 2 or above
- Tissue Viability team referral (via ICE) if pressure grade 3/4

6.9.4 Oral hygiene

It is essential to maintain good oral health in infants and children who are not fed orally. As per UHL policy all patients must have a Mini Mouth Care Matters assessment via Nerve Centre. Regular oral hygiene must be carried out every 4-6 hours as per condition dictates in the Children's Hospital and for babies on NNU cares should be provided every 6 hours.

It is essential to encourage infants, children and young people to take oral diet if they are able, the use of dummy for infants and to encourage older children to use their mouth in play activities can help maintain or develop their normal sucking/feeding responses.

6.10Removing a NGT/OGT

- Depending on the age of the patient, explain the procedure and gain verbal consent from the patient and/or parents/carers.
- Clean hands as appropriate
- Remove the tape and gently withdraw the tube through the nostril
- Ensure the tube is intact and document it's removal
- Discard the tube in the clinical waste bin
- Clean the patient's face as required

6.11Discharging a patient with an NG tube

- A full multidisciplinary supported risk assessment is made and documented before a patient with a NGT/OGT is discharged from acute care into the community
- A working feeding plan must be formulated in conjunction with the dietitian and parents/carers with regards to the patient's nutritional needs and lifestyle.
- Parents/carers must undertake training, supervised practice and competency assessment on all aspects of the procedure and care of their child and the NGT/OGT tube – this must be documented in the Children's Services Parents NGT competency assessment booklet and medical notes.
- Parents/carers must be made aware of whom to contact for emergency advice.
- Referrals within Leicestershire must be made to (5 days' notice must be given where possible):
    - Home Enteral Nutrition Service (HENS) – Telephone: 0116 2727216
      If an enteral feeding pump is required, provision of this will be arranged by the HENS for children transferred to the Leicestershire HENS.

- Children's Community Nursing Service – Telephone: 0116 2255453
- In NNU the Neonatal Outreach team must be involved in the discharge and follow up process for all babies going home with NGT/OGT.
- Outside of Leicestershire – Referral must be made to the Paediatric Dietitian to refer to Nutrition and Dietetic service in child's own area.
- You must consider who else needs to be involved in the child's care (with NGT/OGT feeds) i.e. Nursery, School Nurse, Respite Care, Health Visitor or GP.
- Ensure equipment and medication is ready for discharge, TTO's should include a one week supply of enteral feed and equipment.
- Supply patient, family/carer with a leaflet – Going home with an enteral feeding tube (for children living in Leicestershire and Rutland) *https://yourhealth.leicestershospitals.nhs.uk/library*

7. EDUCATION AND TRAINING REQUIREMENTS

7.1 It is the responsibility for all UHL staff working in an area where they regularly look after patients requiring enteral tube feeding update their practice and maintain their competency and skills.

7.2 Education or training issues should be highlighted at appraisal and addressed through a personal development plan.

7.3 All newly appointed nurses/nursing associates (including experienced nurses) to the NNU and the Children's Hospital must attend training provided by the Women's and Children's Education team regarding the use, insertion and assessment of tube placement. Followed by completion of a NGT/OGT competency assessment package. The assessment package comprises of knowledge based questions, supervised practice and LCAT assessments for both inserting an NG tube as well as pH testing to confirm gastric placement.

7.4 All HCA's and Nursery Nurse's working in both the Neonatal Unit's and the Children's Hospital must attend training provided by the Women's and Children's Education team regarding the assessment of tube placement and correct use of the tube to administer enteral nutrition. This is then followed by completing an NG Feeding work booklet that comprises of knowledge based questions, supervised practice and LCAT assessments for both bolus gravity feeding and pump feeding (both assessments including correct tube placement checking).

7.5 It is the responsibility for all medical staff reporting tip placement confirmation of NGT/OGT after radiological investigation to ensure that they are competent to do so. Trainee Practitioners identifying training needs with regard to tip placement confirmation of NGT/OGT in Radiology should escalate their needs to their Educational Supervisor, Consultant staff, their appraiser or the Associate Medical Director.

7.6 X-ray confirmation of placement must be limited to medical clinicians who have received appropriate training. Essential to role training "Chest X-Ray Interpretation of Nasogastric Tube Position" on HELM. If applicable they should complete specific

MaxFax training and assessments as identified by their education lead to ensure competency in passing NGT/OGT on babies/children with certain Maxillo-facial disorders.

8. PROCESS FOR MONITORING COMPLIANCE

Element to be monitored	Lead	Tool	Frequency	Reporting arrangements
This policy is followed in relation to NGT/OGT insertion	Head of Nursing/ Midwifery, Head of Service	Audit	Annually	UHL Nutrition & Hydration Committee
Gastric placement is confirmed prior to using NGT/OGT at all times	Head of Nursing/ Midwifery, Head of Service	Audit	Annually	UHL Nutrition & Hydration Committee
All health care professional are competency assessed	Ward Sister, Matrons, Head of Nursing/Midwifery, Head of Service	Audit	As occurs	UHL Nutrition & Hydration Committee

9. EQUALITY IMPACT STATEMENT

9.1 The trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.

9.2 As part of its development, this policy and its impact on equality have been reviewed and no detriment identified.

10. SUPPORTING REFERENCES, EVIDENCE BASE AND RELATED POLICIES

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Metheny NA, Titler MG. Assessing placement of feeding tubes. American Journal of Nursing. 2001. 101 (5): 36 – 46.

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National Patient Safety Agency (NPSA) 2019 Nasogastric tube misplacement: continuing risk of death and severe harm. 22 July 2016 updated December 2019 HTTPS://WWW.ENGLAND.NHS.UK/PUBLICATION/PATIENT-SAFETY-ALERT-NASOGASTRIC-TUBE-MISPLACEMENT-CONTINUING-RISK-OF-DEATH-AND-SEVERE-HARM/

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Nursing and Midwifery Council. (NMC) (2018) Code of professional conduct. NMC London.

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Royal College of Nursing (RC https://www.rcn.org.uk/-/media/royal-college-of-nursing/documents/publications/2019/october/007-746.pdf N)

Nasogastric and Orogastric Tubes in Adults UHL Policy B39/2005

Waste Management UHL Policy A15/2002

Personal Protective Equipment at Work UHL Policy B9/2004)

Infection Prevention UHL Policy B32/2003

Consent to Examination or Treatment UHL Policy A16/2002

Breast Feeding Support UHL Obstetric Guideline C120/2008

Infant Feeding Policy UHL LLR and Childrens Centre Services E1/2015

Appendix 1

Procedure for Insertion of a Nasogastric Tube/Orogastric Tube in Neonates, Infants, Children & Young People

University Hospitals of Leicester NHS
NHS Trust

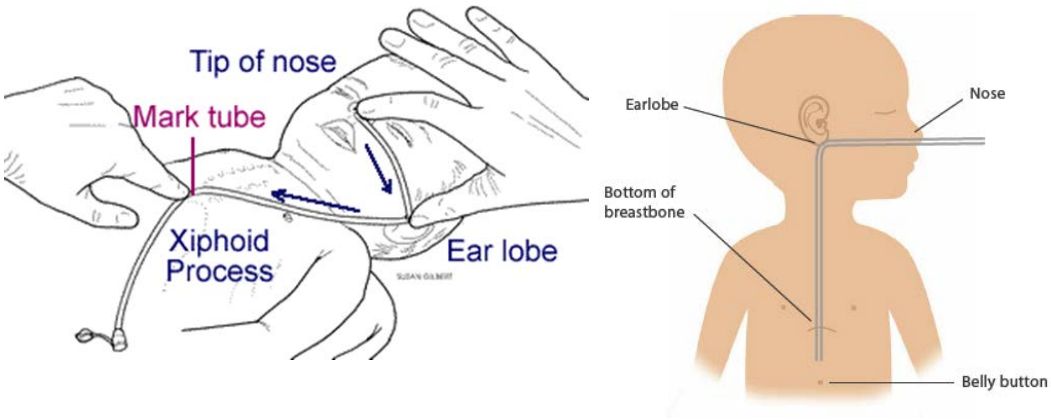
1. Introduction and Scope

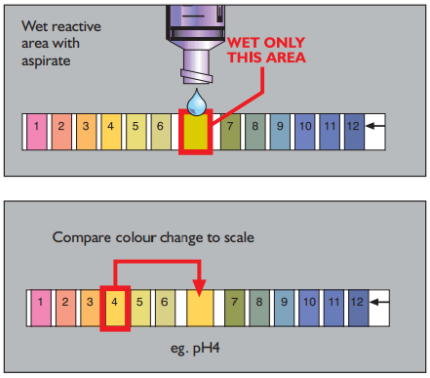
The procedure is aimed at all Health Professionals involved in the care of neonates, infants, children and young people within University Hospitals of Leicester Trust.

2. Key Points

Before the decision is made to insert a NGT/OGT tube an assessment is made to establish the reason for insertion and document this in the healthcare records. Check that there are no contraindications to passing a NGT/OGT, such as anatomical deformity, trauma, recent oral, nasal or oesophageal surgery, or severe gastro-oesophageal reflux disease (GORD).

Procedure for Insertion of a Nasogastric/Orogastric Tube in neonates, infants, children & young people	
No.	**Action**
1.	**Equipment Required:** • Appropriate PPE • Hand sanitiser • Clear dressing to secure tube • Hypoallergenic dressing to protect skin • Drink if appropriate • pH testing strips • Sterile EnFit enteral syringes for aspirating tube • Sterile EnFit nasogastric tube – size according to patient • Sterile water – labelled with time/date of opening. To be discarded after 24 hours. • Blanket or sheet
2.	Explain the procedure to the patient and/or family/carers taking into consideration age and development of the child. Obtain informed consent. If NGT/OGT is to be used for feeding purposes the patient and/or family/carers must be made aware of the associated complications which may be caused by tube misplacement and the measures put in place to prevent this from happening.
3.	Minimal handling and an aseptic non-touch technique (ANTT) must be used throughout all NGT/OGT procedures.
4.	Prepare the patient prior to the procedure ensuring they are safe and secure; this must be completed by two people in the Children's Hospital. <u>For babies on the Neonatal Unit (NNU)</u> • Do not need to be wrapped, however safety of the babies skin must be

	considered at all times. <u>Infants under the age of 1 year</u> • Should be wrapped securely in a blanket or sheet, maintain head in a steady position throughout as indicated in the diagram below.  <u>Older children/Young people</u> • May sit in an upright position or on an adult's knee if appropriate/preferred.
5.	If the tube is a replacement tube use the alternative nostril to reduce the risk of nasal erosion.
6.	Use the NEX measurement to establish the appropriate length to pass the tube, by measuring the distance from the tip of the patient's Nose to Earlobe to Xiphisternum. Keep a record of the measurement to record on the NG tube insertion checklist in the medical notes. <u>NEX</u> <u>NEMU</u>  In neonates, use the NEMO measurement to establish the appropriate length to pass the tube, by measuring from the tip of the patient's Nose to Earlobe to the Midpoint between the sternum and the Umbilicus. <u>For Orogastric tubes</u> please start the measurement from the centre of the lips.
7.	Prior to insertion, check that the tube is intact. If the tube has a guidewire ensure that it moves freely within the tube, ensuring it is not kinked or protruding from the end.

8.	With assistance to support/hold the patient, gently pass the tube into the patient's nostril advancing it along the floor of the nasopharynx to the orpoharynx until the predetermined mark is reached. In NNU this can be performed by one person. If appropriate/ clinical condition allows, you may want to allow the patient to suck on a dummy/ bottle or offer oral fluids to support with swallowing when passing a NGT (not for OGT passing). If any obstruction/resistance is felt you must withdraw the tube and try again in a slightly different direction or use the other nostril. If the infant/child shows signs of distress, breathlessness, server coughing, gasping or cyanosis – you must remove the tube immediately.
9.	Once tube has been passed to the intended external marking, with assistance if needed, aspirate using the correct size/type of enteral syringe (20 ml for NNU, 60ml for Children's Hospital). Apply to the pH paper, and then interpret the results using the *Decision Tree & Risk Assessment for NGT/OGT Placement Checks in neonates, infants, children and young people* on page 7.  **IMPORTANT: NO FLUID, MEDICATION OR FEED MUST BE ADMINISTERED UNTIL THE POSITION HAS BEEN CONFIRMED BY A COMPETENT REGISTERED PROFESSIONAL PRIOR TO USE.**
10.	<u>If using nasogastric tube with a guidewire:</u> Once the gastric placement has been confirmed by assessment of pH. Remove the guidewire if present – if the nasogastric tube containing a guidewire is not already lubricated – flush the lumen with sterile water, and proceed to remove the guidewire using gentle traction (not including neonates). Retain the guidewire which should be cleaned, dried and placed in a sealed bag, labelled with the patient's name for occasion where the tube will be repassed.
11.	Secure the tube to the cheek with hypoallergenic tape and/or appropriate alternative. For babies on NNU use tegarderm to secure the tubes. • Ensure the skin is clean, dry and free from any creams, oils, mucous or feed to promote adhesion. • To ensure the security and placement of the tube, it is important to re-dress promptly when indicated i.e. dressing no longer intact/ soiled. • Signs of nasal and cheek trauma/irritation must be assessed twice daily as per pressure area assessments i.e. BEST SHOT, and managed

	accordingly.
12.	Complete the NG Insertion checklist and put in the medical notes (see section 7.3).
Potential Complications	
	Complications of an NGT/OGT should be monitored daily. These may include: • Bleeding • Soreness around nose • Ulceration in the nasal cavity • Coughing/vomiting blood stained fluid • Awareness of increase in swallowing • Skin integrity compromised by tube fixing on the tube or tube pressure • Vomiting of blood – may indicate gastric irritation Nursing staff must report any symptoms to medical staff.

Appendix 2: Procedure for confirming the position of a Nasogastric/Orogastric tube in Neonates, Infants, Children and Young People

University Hospitals of Leicester NHS
NHS Trust

1. Introduction and Scope

The procedure is aimed at all Health Professionals involved in the care of neonates, infants, children and young people.

Procedure for Confirming the Position of a Nasogastric/Orogastric Tube in Neonates, Infants, Children and Young People.	
No.	**Action**
1.	**Equipment required:** • Appropriate PPE • Hand sanitiser • Appropriate sized nasogastric tube • Drink if appropriate e.g. not fluid restricted or contraindicated • Sterile EnFit enteral syringes for aspirating tube • pH indicator paper • Sterile water – labelled with time/date of opening. To be discarded after 24 hours. • Blanket or sheet
2.	Correct NGT/OGT position must be confirmed in the following circumstances: • At the time of insertion • Before any fluid, medicine or feed is introduced via the tube • In the event of the child/infant having an episode of retching, vomiting, excessive coughing or respiratory distress • Following a successful attempt to resolve a blocked tube • In the event that the tube appears to have partially displaced i.e. when the visible tube length has increased/decreased • At least once a day whilst on a continuous pump feed (prior to setting up/during a break in feed) • For babies on NNU the pH must be checked as a minimum every 6 hours
3.	If the need to confirm tube position is not directly following tube insertion, gently insert 1 - 2ml of air to free feeding ports from water, feed, mucous or debris. • 4 – 5FR Tubes – 1ml of air • 6 – 8 FR Tubes – 2ml of air
4.	**AUSCULTATION OR THE WHOOSH TEST ARE NOT A RELIABLE MEDTHOD OF CONFIRMING TUBE POSITION AND MUST NOT BE USED.**
5.	Using an EnFit compliant enteral syringe, aspirate a small amount of stomach contents, ensure you are using the correct size syringe (see 7.2.2 table for more information).
6.	Test the aspirate on the pH indicator paper. Interpret results as follows and use *the Decision Tree & Risk Assessment for NGT/OGT Placement Checks in*

	neonates, infants, children and young people (page 7): <u>pH 5.5 or below</u> Indicates correct tube placement, ready to use at time of testing. Seek advice from a registered professional if unsure of the pH. **PLEASE NOTE:** Where minimal quantities of feed are given, the aspirate may be re-administered to maintain nutritional requirements i.e. in neonates and small babies. <u>pH 6.0 or above</u> Indicates incorrect tube placement. **STOP** and do not use to administer a fluid, medicines or feed. - Please see section 6.5 for more information regarding **Altered gastric pH readings**
7.	If you are unable to obtain a gastric aspirate or if the pH is 6.0 or above, try the following: • On initial insertion, gently advance or retract tube and re-aspirate at 1cm intervals • Offer acid based drink or fluid containing food colouring (where appropriate) and repeat aspirate • Reposition the patient onto their left side • Instil 1-2ml of air into the tube using a syringe • If appropriate gently change patient's position or encourage activity or movement • Give mouth care to patients who are nil-by-mouth • Offer neonate/infant a dummy to encourage sucking • If appropriate wait for a further 15 minutes and re-aspirate
8.	If you are still unable to obtain an aspirate/ if pH remains 6.0 or above, aspirate within the safe range: • Consider that the tube may be blocked or misplaced • Discuss with senior staff • Consider removing and replacing the tube unless contraindicated (e.g. post oesophageal/gastric surgery in which case contact senior member of the surgical team). • If the patient has a Transanastomotic tube, this MUST NOT be removed by the ward team. All concerns should be discussed with the Paediatric Surgeon.
9.	If all efforts to gain a 1st Line test by gaining a gastric pH fail, the 2nd Line test by x-ray will then need to be considered following discussions with the medical/surgical teams. Prior to the patient having an x-ray, remove the guidewire from the NGT/OGT (where necessary) to demonstrate the tip is not curled. Any proposed x-ray will be refused with a guidewire in situ.
10.	Do not use the NGT/OGT until the x-ray has been reviewed by a competent clinician who will confirm correct tube position or will give direction on the adjustment required. Ensure that this has been documented in patient's medical notes. PLEASE NOTE: confirmation by x-ray of correct tube placement does not replace the requirement to check gastric placement prior to every use by pH testing.

Appendix 3: Standard Operating Procedure (SOP): Individualised Nasogastric tube care plan for children where gastric pH is consistently 6.0 or above

For paediatric use only

University Hospitals of Leicester NHS
NHS Trust

This SOP must be used in conjunction with the Nasogastric and Orogastric Tube Insertion in Children and Neonates UHL Childrens Hospital Policy

GOAL			
To determine if it is appropriate to proceed with the use of a nasogastric tube (NGT) to administer medication / provide adequate nutritional intake and hydration when gastric pH is consistently 6.0 or above.			
Patient Details: **Name:** **DOB:** **S NUMBER:**		**Ward**	**Site**	**Date care plan commenced** **Date NGT inserted** **Date care plan discontinued**
Size:	**……Fr**	**Measurement at nostril:**	**……cm**

RATIONALE	
This care plan is for a named patient only, in agreement with senior nursing and medical team where all options to gain an aspirate of pH 5.5 or below have been attempted and the Insertion and management of Nasogastric and Orogastric Tubes in Neonates, Infants, Children and Young People Policy (B54/2017) has been followed, including all actions from Decision tree & risk assessment for NGT/OGT placement checks in neonates, infants, children & young people. **This checklist must be reviewed and signed by a Senior Doctor and the Nurse when gastric pH is 6.0 or above to determine if it is appropriate to proceed with use.**	
1.	Recent CXR to confirm gastric placement of the tube currently in use.
2.	No new signs of respiratory distress.
3.	No new symptoms/ concerns of increased coughing, vomiting, or retching.
4.	External length of the tube unchanged.
5.	No risk of NGT movement due to physio, suction or increased patient activity.
6.	pH of milk/feed has been reviewed & there have been no recent changes to type of milk/feed.

7.	All acid suppressing drugs have been reviewed, changed or stopped if indicated following discussion with pharmacist and consultant.
8.	Discussion with parents/carers to explain inability to gain PH below 5.5 documented in nursing records and parents/ carers aware
9.	Confirmed and documented agreed actions following checklist review.

- **Confirmation of the need to continue this care plan should be documented daily.**
- **Aspirates should continue to be documented on the fluid balance charts.**
- **If aspirates return to ≤ pH 5.5 this care plan can be discontinued.**

Date	Time	Gastric pH	Checklist followed	Doctor Signature	Doctor Name (PRINT)	Nurse Signature	Nurse Name (PRINT)

Date	Time	Gastric pH	Checklist followed	Doctor Signature	Doctor Name (PRINT)	Nurse Signature	Nurse Name (PRINT)

Appendix 4: Nasogastric/Orogastric/Nasojejunal Tube Insertion(s) for Children/Young People

Standard Operating Procedure

UHL Paediatric Intensive Care Unit (PICU) (LocSSIPs)

Introduction and Background:

National Safety Standards for Invasive Procedures (NatSSIPs) have been developed by a multidisciplinary group of clinical practitioners, professional leaders, human factors experts and lay representatives brought together by NHS England. They set out the key steps necessary to deliver safe care for patients undergoing invasive procedures and will allow organisations delivering NHS-funded care to standardise the processes that underpin patient safety.

Organisations should develop Local Safety Standards for Invasive Procedures (LocSSIPs) that include the key steps outlined in the NatSSIPs and to harmonise practice across the organisation such that there is a consistent approach to the care of patients undergoing invasive procedures in any location. Put simply, NatSSIPs should be used as a basis for the development of LocSSIPs by organisations providing NHS-funded care.

The development of LocSSIPs in itself cannot guarantee the safety of patients. Procedural teams must undergo regular, multidisciplinary training that promotes teamwork and includes clinical human factors considerations. Organisations must commit themselves to provide the time and resources to educate those who provide care for patients.

This LocSSIP is designed for Nasogastric (NG), Orogastric (OG) and Nasojejunal (NJ) tube insertion. The SOP will help to familiarise staff with the LocSSIP and safety checklist prior to its use.

Never Events:

No never events have been recorded for this procedure in the Paediatric Intensive care Units. These checklists are designed to ensure that patient safety during a procedure is paramount and that risk of never events is reduced.

List management and scheduling:

Scheduled procedures will be discussed and planned at PICU ‘business round’ meetings which, incorporates the Morbidity and Mortality data collection and the Safety Briefing. Emergent procedures will be performed as necessary under the direction of the consultant in charge of the Paediatric Intensive Care Unit.

Patient preparation:

The child or young person should be involved in their care planning when possible and the clinician who needs to perform the procedure should explain the procedure to the child after explaining why it is necessary. The play specialist or clinical psychologist may be useful in helping during the discussion and consenting process and during preparation for the procedure.

If a competent young person refuses to consent to a procedure, parents/guardians cannot override a decision for treatment that you consider to be in their best interests, but you can rely on parental consent when a child lacks the capacity to consent. Where possible, the child/young person should consent to their own treatment however, if the child cannot competently consent, then a parent/guardian can provide the consent on their behalf. This can be discussed at the bedside or in a treatment/quiet room for more privacy-it should be wherever is felt to be most comfortable.

The identity of the patient must be verified by the child/parent/carer. Name and Date of Birth (DOB) will be checked against the ID band as per UHL policy. In infants under 1 year of age, ID bands must be attached to the lower limbs only. In children of all other ages, the ID band should be attached to the non-dominant hand/limb.

Consent should be documented in the notes and ticked as gained on the UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion. Consent should include the possible difficulties that may be encountered. An explanation of how the procedure will be carried out should be given, detailing the strategies you utilise to ensure strict adherence to infection prevention guidance.

All ventilated children must have a NG/OG/NJ tube as this allows for stomach emptying when on free drainage and reduces the risk of aspiration. It is also necessary for when the child/young person is medically well enough to begin feeding. Feeds are commenced via the NG/OG/NJ Tube with either expressed breast milk or suitable formula/prescribed milk that has been carefully chosen between the family, dietetic team and the medical team in charge of that patients care.

Some children require NG/OG/NJ Tubes when not ventilated to increase their calorific input for reasons that are specific to that individual.

NJ tubes are required for children/young people who are not tolerating their feeds and losing weight despite all attempts to rectify problems that have arisen. These are inserted using the same method as an NG/OG/NJ tube but with a longer length and the position should be confirmed with an x-ray and reported as appropriate for use by an ANP or doctor.

Workforce – staffing requirements:

One person must be assigned to complete the checklist in addition to the operator and assistant performing the procedure. Staffing requirements will be allocated in line with unit activity.

Ward checklist, and ward to procedure room handover:

The UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion for each individual procedure will hold all information regarding the procedure. The procedure is

completed by a confident and competent nurse or nursing associate (if applicable), no further information is required for handover.

Procedural verification of site marking:

This is not required for the procedures covered in this SOP. Location of the NG/OG/NJ tube will be documented on the UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion.

Team safety briefing:

The team safety briefing is incorporated into each checklist. As a minimum, the operator and person completing the checklist (usually the bedside nurse) must be present. It is clear that at times of high activity the person completing the checklist may also need to perform the role of assistant.

Sign in / Before the procedure:

'Sign In' refers to the checklist completed at the patient's arrival into the procedure area.

- Sign In will take place at the patient's bedside
- The sign in must be carried out by two people. The people present should ideally be the operator and assistant. That the patient will be encouraged to participate where possible.
- Any omissions, discrepancies of uncertainties must be resolved before proceeding.

The check should consist of:

- Confirmation of the patient identity and consent for the procedure,
- Identification of all team members and their roles,
- Pre-procedure observations documented and the patients medication/coagulation been checked and
- Are there any concerns about the procedure?

Time out:

'Time Out' is the final safety check that must be completed for all patients undergoing invasive procedures just before the start of the procedure. The WHO checklist is the Gold Standard and may be adapted for local use with the deletion or addition of elements to suit the procedural requirements. Some Royal Colleges or other national bodies have checklists for their specialties.

The Time Out should include:

- That the patient will be encouraged to participate where possible,
- Who will lead it (any member can),
- That all team members must be present and engaged as it is happening,
- That is will occur immediately before the procedure start,
- That separate time out checklist will be completed if there is a separate or sequential procedure happening on the same patient,
- That any omissions, discrepancies or uncertainties must be resolved before staring the procedure.

Specifically, the verbal time out between team members confirms that:

- A Basal skull fracture has been ruled out if applicable,
- Coagulation has been rectified,
- The patient position is optimal,
- All members of the team have roles assigned and
- Any concerns about the procedure have been identified and mitigated.

As per UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion (Appendix 5)

Performing the procedure:

The procedure can only be performed by those with appropriate training – this will be in line with current PICU training. Direct supervision must occur for those learning the procedures by an appropriately trained individual. All operators must ensure familiarity with the equipment required prior to performing any invasive procedure.

Monitoring:

The patient should be monitored throughout the time in the procedural area. Consider:

- O2 Sats
- ECG
- Blood Pressure (NIVBP should cycle regularly)
- Pulse rate
- Respiratory rate
- GCS
- Temp
- (Capillary Blood Glucose) CBGs
- ETCO2 for ventilated patients

Ensure that this is compliant with the Analgesia and Sedation Guideline for Paediatric Intensive Care Unit C10/2009 if relevant.

Prosthesis verification:

All equipment used must be checked that it is within date. As appropriate there is recording of the device on the UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion.

Prevention of retained foreign objects:

The responsibility for ensuring all sharps (guidewires) are disposed of correctly is with the procedure operator.

Radiography:

These procedures do not require radiography during the procedure. If post procedure X-rays are required this is clearly highlighted on UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion. The UHL Safer Surgery Invasive Procedure Safety

Checklist: NG/OG/NJ Tube Insertion also requires verification that the NG/NJ tube is safe to use.

Sign out:

'Sign Out' must occur post procedure. This covers, as appropriate, the following:

- Confirmation of procedure
- Confirmation that counts (guidewires) are complete if applicable
- Discussion of post-procedural care and any outstanding investigations required to confirm safe completion of the procedure
- Equipment problems to include in team briefing

All the above points will be documented on the
UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion.

Handover:

There should be no handover required as most NG/OG/NJ tube placements are conducted by the bedside nursing team. Should a tube be inserted by a member of the medical team then they should provide an explanation of the procedure. All other information pertaining to the NG should be documented on the safety checklist (UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion**).**

Team Debrief:

A team debrief should occur as a discussion at the end of all procedure sessions, this should happen when the patient has been made comfortable, the procedural waste has been disposed of and documentation has been completed.

For those who have been learning the procedure and have been supervised by an appropriately trained person, the appropriate documentation/leaning pack must be completed.

Post-procedural aftercare:

Dispose of sharps (guidewires) safely and check the integrity of the guidewire to ensure it is intact. Test aspirate to confirm NG/OG/NJ position-this should be verified by a first and second checker, inform the team if the NG/OG/NJ is suitable for use and document this. CHG wipe reusable equipment and return to original places.
Observe for signs of respiratory distress:

- Increase/Decrease of respiratory rate,
- Coughing or increased mucus production,
- Pyrexia or Tachycardia – which may indicate chest infection,
- Skin pallor/cyanosis- Oxygen Saturations level if being monitored,
- Change in conscious level, response or behaviour,
- Feeds must be stopped immediately with any coughing, gagging or vomiting or signs of respiratory distress until the NG/OG/NJ tube can be confirmed as being in the correct position.

If the tube is not flushed appropriately, it will become blocked and require replacing. Observe for signs of Tube Trauma: these may include bleeding, soreness or ulcers visible in the nasal

cavity or coughing or vomiting blood. Skin integrity may be compromised by adhesive or tube pressure. Before commencing NG/OG/NJ feeds a PYMS Nutritional Assessment must be completed and re-assessed weekly. For babies, the nutritional status should be assessed daily. Unless contra-indicated children should be fed at an angle of 30-45 degrees to aid digestion not prone as this can increase the risk of aspiration.

Discharge:

Not applicable for children/young people who need to remain in PICU. Those children/young people in a ward area will receive a full multidisciplinary supported risk assessment and it will be documented before a patient with a Nasogastric tube is discharged from acute care into the community.

- A working feeding plan must be formulated in conjunction with the Dietician, Parents/Carers with regards to the Infant or Child's nutritional needs and lifestyle
- Parents/Carers must undertake training, supervised practice and competency assessment on all aspects of the procedure and care of their child and the NG/OG tube – this must be documented in the Children's Services Parents NG competency assessment booklet & Case Notes
- Parents/Carers must be made aware of whom to contact for emergency Insertion and Management of
- Procedure for Ongoing Care of Nasogastric/Orogastric Tube in Infants and Children advice.
- Within Leicestershire - Referral must be made to the Home Enteral Nutrition Service (Tel: 0116 272 7216) and the Children's Community Nursing Service (Tel: 0116 225 5453) at least 5 days warning must be given.

Governance and audit:

Deviation from the LocSSIPs unless clinically justified in an emergency constitutes a safety incident. All safety incidents must be recorded on a DATIX.

Any Datix submitted will be fully investigated by a designated person and overseen by the Children's Patient Safety Coordinator. All findings will be fed back to the team involved and any learning will be cascaded throughout the Children's Hospital.

To submit monthly Safe Surgery Audit and WHOBARS assessment as per Safe Surgery Quality Assurance & Accreditation programme.

Training:

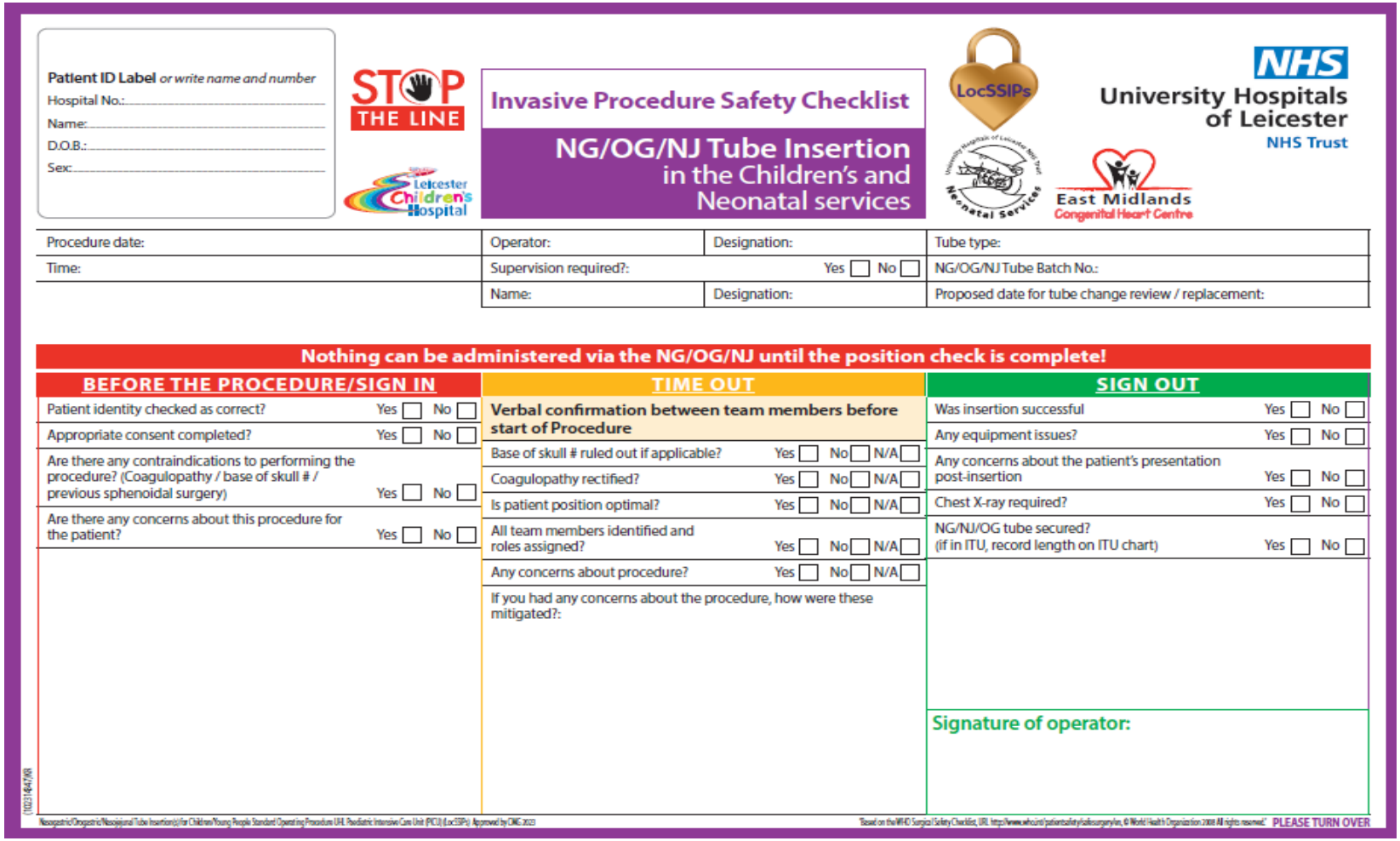
All staff performing or assisting with access procedure must receive appropriate training. Training opportunities and documented progress must be discussed with the supervisor/assessor/preceptor.
Training will address:

- Hand Hygiene,
- Aseptic non-touch technique (ANTT) and
- pH testing for tip placement confirmation of NGT/OGT/NJT to ensure that they have completed and passed the Insertion competencies based UHL LCAT assessment.

Documentation:
The UHL Safer Surgery Safety Checklist is the record of insertion and should be filed in the patients notes. UHL Safer Surgery Invasive Procedure Safety Checklist: NG/OG/NJ Tube Insertion (Appendix 5).
References to other standards, alerts and procedures:
National Safety Standards for Invasive Procedures, NHS England 2015: https://www.england.nhs.uk/patientsafety/wp-content/uploads/sites/32/2015/09/natssips-safety-standards.pdf UHL Safer Surgery Policy: B40/2010 Insertion and Management of Nasogastric and Orogastric Tubes in Children and Neonates B54/2017 Feeding Guidelines for Children on Intensive Care Units C90/2016 Hand Hygiene UHL Policy B32/2003 Analgesia and Sedation Guideline for Paediatric Intensive Care Unit C10/2009 Consent to Examination or Treatment UHL Policy A16/2002 Shared decision making for doctors: Decision making and consent (gmc-uk.org) COVID and PPE: UHL PPE for Transmission Based Precautions - A Visual Guide COVID and PPE: UHL PPE for Aerosol Generating Procedures (AGPs) - A Visual Guide
END

Appendix 5:

LocSSIP – Invasive Procedure Safety Checklist: NG Tube Insertion



Patient ID Label *or write name and number*
Hospital No.:
Name:
D.O.B.:
Sex:

STOP THE LINE

Leicester Children's Hospital

Invasive Procedure Safety Checklist

NG/OG/NJ Tube Insertion in the Children's and Neonatal services

LocSSIPs

University Hospitals of Leicester Neonatal Services

NHS University Hospitals of Leicester NHS Trust

East Midlands Congenital Heart Centre

Procedure date:	Operator:	Designation:	Tube type:
Time:	Supervision required?: Yes ☐ No ☐		NG/OG/NJ Tube Batch No.:
	Name:	Designation:	Proposed date for tube change review / replacement:

Nothing can be administered via the NG/OG/NJ until the position check is complete!

BEFORE THE PROCEDURE/SIGN IN

- Patient identity checked as correct? Yes ☐ No ☐
- Appropriate consent completed? Yes ☐ No ☐
- Are there any contraindications to performing the procedure? (Coagulopathy / base of skull # / previous sphenoidal surgery) Yes ☐ No ☐
- Are there any concerns about this procedure for the patient? Yes ☐ No ☐

TIME OUT

Verbal confirmation between team members before start of Procedure

- Base of skull # ruled out if applicable? Yes ☐ No ☐ N/A ☐
- Coagulopathy rectified? Yes ☐ No ☐ N/A ☐
- Is patient position optimal? Yes ☐ No ☐ N/A ☐
- All team members identified and roles assigned? Yes ☐ No ☐ N/A ☐
- Any concerns about procedure? Yes ☐ No ☐ N/A ☐

If you had any concerns about the procedure, how were these mitigated?:

SIGN OUT

- Was insertion successful Yes ☐ No ☐
- Any equipment issues? Yes ☐ No ☐
- Any concerns about the patient's presentation post-insertion Yes ☐ No ☐
- Chest X-ray required? Yes ☐ No ☐
- NG/NJ/OG tube secured? (if in ITU, record length on ITU chart) Yes ☐ No ☐

Signature of operator:

Nasogastric/Orogastric/Nasojejunal Tube Insertion(s) for Children/Young People Standard Operating Procedure UHL Paediatric Intensive Care Unit (PICU) (LocSSIPs) Approved by CMG 2023

Based on the WHO Surgical Safety Checklist, URL http://www.who.int/patientsafety/safesurgery/en, © World Health Organization 2008 All rights reserved.

PLEASE TURN OVER

Patient ID Label *or write name and number*
Hospital No.:
Name:
D.O.B.:
Sex:

STOP THE LINE

Leicester Children's Hospital

Invasive Procedure Safety Checklist

NG/OG/NJ Tube Insertion in the Children's and Neonatal services

LocSSIPs

NHS University Hospitals of Leicester NHS Trust

University Hospitals of Leicester NHS Trust Neonatal Services

East Midlands Congenital Heart Centre

NG/OG/NJ Tube Position Check

NG/OG/NJ tube safe to use?	Yes ☐ No ☐

If the tube is not safe to use (no positive pH check) then to proceed to 'If no positive pH, check on insertion/if patient coughing during insertion'.

Size of tube:	
Length of NG/OG/NJ nose/mouth (cm):	
PH check on insertion:	
Nostril used?	Left ☐ Right ☐

If no positive pH check on insertion/if patient is coughing excessively during insertion

Chest xray check required?	Yes ☐ No ☐
Does the tube path follow the oesophagus and avoid the contours of the bronchi?	Yes ☐ No ☐
Does the tip clearly bisect the carina or the bronchi?	Yes ☐ No ☐
Is the tip clearly visible below the left hemi-diaphragm?	Yes ☐ No ☐
Is the tube safe to use?	Yes ☐ No ☐

If pH remains 6.0 or above

Consider completing the 'Individualised Nasogastric tube care plan for children where gastric pH is consistently 6 or above' document with a senior doctor to assess whether tube is safe to use. Yes ☐ No ☐

(Document is found in Appendix 4 'Insertion and Management of Nasogastric and Orogastric Tubes in Neonates, Infants, Children and Young People.' (B54/2017)

Inserted	2nd Checker	Chest xray reviewed by
Name:	Name:	Name:
Signature:	Signature:	Signature:
Date:	Date:	Date:
Time:	Time:	Time:

Nasogastric/Orogastric/Nasojejunal Tube Insertion(s) for Children/Young People Standard Operating Procedure UHL Paediatric Intensive Care Unit (PICU) (LocSSIPs) Approved by CMG 2023

Appendix 6: Patient Information Leaflet for Procedure

Available at: Home (leicestershospitals.nhs.uk)