Ashford and St. Peter's Hospitals
NHS Foundation Trust

Paediatric Nasogastric and orogastric feeding tube policy

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Status: Approval date: 19/11/2024

Ratified by: Paediatric Guidelines Committee

Review date: November 2027

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History

Issue	Date Issued	Brief Summary of Change	Author
1	19/11/24	New policy	Jayne Nguyen
2			

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Department/Directorate	Paediatrics.
Date of issue	19/11/24
Review due	November 27
Ratified by	Paediatric Guidelines Committee
Audience	All Staff in paediatrics caring for children with Nasogastric and orogastric tubes.

Executive summary

The purpose of this policy is to detail the roles and responsibilities for healthcare professionals relating to the use of Paediatric Nasogastric and orogastric feeding tubes. The policy will provide the standards for good practice & monitoring, with the aim of reducing associated risks while maintaining patient centred care.

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See also:
Patient consent policy: September 2020
Introduction to infection prevention and control: April 2019
Parent Competency Document

1. Introduction

The use of misplaced nasogastric and orogastric feeding tubes was first recognised as a patient safety issue by the National patient safety agency (NPSA) in 2005 and three further alerts have been issued by the NPSA and NHS England between 2011 and 2016. The Patient Safety Alert stated that between these dates, 95 Incidents were reported, where fluids or medication were introduced into the respiratory tract or pleura via a misplaced nasogastric or orogastric tube. This is described as a Never Event, where guidance or safety recommendations that provide strong systemic protective barriers are available at national level and should have been implemented by all healthcare providers to make them 'wholly preventable'. While c. 3 million feeding tubes are place annually (National institute for Health improvement 2016), these incidents suggest that there remains a risk to patient safety. Checking tube placement before use via pH testing of aspirate and, where necessary x-ray imaging, is essential in preventing harm.

This document defines the policy and procedures to be followed within Ashford and St Peter's Hospitals NHS Foundation Trust and applies to all care environments within the Trust that insert and care for infants and children with nasogastric and orogastric tubes. It aims is to ensure that the highest standards of evidence-based care are practiced.

This policy will be reviewed every three years and ratified by the paediatric governance group.

Nasogastric tubes are used to:

- Allow drainage/removal of stomach content or air
- Provide a route to the gastrointestinal tract for the administration of fluids, drugs and/or nutrients for those infants and children unable to take sufficient fluid and nutrition orally.

Nasogastric (NG) is the most common route for enteral feeding. The benefits include:

- It is easy to establish
- It is minimally invasive
- Parents and mature patients can be taught to pass the tube at home if required

Risks/drawbacks associated with NG tube feeding include:

1. The procedure for inserting the tube may be distressing for many children
2. The tube is very noticeable
3. Complications of tube placement can be fatal as can the administration via a tube that has become displaced/misplaced (this is a never event)

2. Scope

2.1 This document is relevant to all employees of Ashford and St Peters NHS Trust (ASPH) as well as staff from other organisations who are working within the Trust who have direct responsibility for the placement and management of nasogastric feeding tubes for paediatric patients.

2.2 Patients and their carers who manage their own care must be supported in developing appropriate knowledge and skills and assessed for competence

Purpose

3.1 The purpose of this document is to:

- Provide up-to-date evidence-based information regarding tube placement and confirmation of tube position in paediatric patients
- Ensure consistent practice across Ashford and St Peters NHS Foundation Trust
- To promote the safety and well-being of all patients who require nasogastric tube feeding.
- To provide a framework of roles and responsibilities for nasogastric tube insertion, management and training.
- To provide guidance regarding scope of professional practice, level of competence and accountability in nasogastric tube insertion, care and management.

3. Explanation of Terms Used

Nasogastric feeding tube (NGT): A tube inserted through the nose and into the stomach for the purpose of drainage or enteral feeding, hydration or administration of medication.

Orogastric tube: When nasogastric feeding is contraindicated a feeding tube may be passed via the mouth into the stomach. The guidance for checking whether the position of the tube is in the stomach will be the same as for nasogastric tubes.

Enteral Syringes: Purple single use with an Enfit design (non-I.V. compatible syringes)

NEMU: Nose to Earlobe to a point midway between the Xiphisternum and the umbilicus. This is used to estimate the length of tube to be inserted in infants and children.

NEX plus: Nose to Earlobe to Xiphisternum plus 5-10cm. This measurement is used to estimate the length of tube insertion for older children and adults to ensure a safe aspirate is obtained.

Local Safety Standard for Invasive Procedures (LocSSIP): an evidence-based standard for invasive procedures that has the potential to lead to a 'Never Event'.

4. Duties and responsibilities

Responsibilities for ensuring the application of this document lies with the medical director, Chief Nurse, Divisional Manager and matrons for each division. Specific professional groups and departments have specific responsibilities.

5.1 All trust employees: All trust employees involved in the practice of NGT management are responsible for ensuring that they understand their responsibilities and that they are competent, or appropriately supervised, to deliver care in line with this document. Trust employees are also responsible for ensuring that they identify concerns or adverse events and that they are reported through Datix.

5.2 Nutritional Steering group (NSG): is accountable to the trust board through the safety and quality group. They are responsible for overseeing and development of nutrition and hydration related strategy, policy and guidelines. They monitor the implementation of related national and local guidelines to ensure best practice across the trust.

5.3 The medical staff / competent clinicians are responsible for:

- Identifying suitable patients for NGT insertion in discussion with other health care professionals
- Following discussion with the patient and family document the decision and refer on those

patients that are not suitable to appropriate teams (NPSA 2011).

- Ensuring that the decision to feed enterally is based on the patient's nutritional status, clinical condition, including an assessment of potential risks or contraindications, and that nutrition support goals are documented in the medical notes and care plan (NPSA 2011)
- Making the decision to delay tube placement when sufficient experienced support is not available to accurately confirm nasogastric tube placement (either by pH or x-ray tube placement). The risk assessment must be documented in the patient notes.
- Ensuring that an x-ray is requested if an aspirate to measure pH cannot be obtained or the aspirate is inconclusive (greater than pH 5.5).
- Ensuring that the NGT is not used unless gastric placement is confirmed on an abdominal plain film X-ray.
- Out of hours x-ray reporting – The doctor identifying the correct placement of the tube, must have completed foundation level training be deemed competent reporting x-rays for the purpose of reporting NGT placement. The must be able to identify the four identifiable landmarks

  The NGT follows the oesophagus and avoids the contours of the bronchi

  The NGT clearly dissects the carnia or bronchi

  The NGT crosses the diaphragm in the midline

  The NGT tip is clearly visible >5cm below the left hemi-diagragm
- The doctor reporting needs to Document the outcome of nasogastric tube radiograph out of hours in line with guidance (section 6.8.2)
- If NGT placement is proposed out of hours, an assessment of the urgency of feeding tube placement is made in line with the NPSA (2011) and NHSI 2016 guidance and documented.
- If NGT placement is considered out of hours and there is not sufficient experienced support available to accurately confirm nasogastric tube placement, documenting any decision to delaying the placement of the tube if requested
- Have the expertise to insert nasogastric tubes, although the procedure is usually carried out by an appropriately trained nurse.
- Ensuring that a risk assessment is undertaken for patients who are considered for discharge home with a nasogastric feeding tube.

5.4 Clinical Nurse Leads are responsible for:

- Ensuring adequate staffing levels of competent nurses within their clinical areas.
- Ensuring training and assessments of competence are undertaken and documented in each clinical area
- Overseeing quality assurance audits for NGT practice compliance and NGT training compliance.
- Investigating compliance concerns and with the Nutrition Support Team put strategies in place to improve compliance.

5.5 Senior nursing staff are responsible for:

- Identifying which members of staff are required to undertake various aspects of feeding and management of nasogastric feeding tubes and ensure training and assessment of

competence is undertaken and documented.

- Keeping an up to date record of training and competencies completed.
- Monitoring standards of practice in relation to insertion and management of nasogastric feeding tubes, performing regular care audits of NGT compliance, investigating poor compliance and promoting the use of incident reporting via Datix.
- Responding to colleague's requests for support and advice regarding nasogastric insertion and management and escalate potentially complex procedures.

5.6 Registered Nursing Staff as part of the multidisciplinary team the nurse will be responsible for:

- Assisting in the decision-making process for the insertion of a tube.
- Providing parent and carer information in order to gain valid verbal consent and notifying the medical team if the patient or carer requires more information
- Reviewing the patient's notes to ensure the decision to place a feeding tube is documented and any potential risk documented prior to tube insertion.
- The verification and documentation of the tube position at the time of insertion and each time the tube is used.
- Initiating a care plan and position check chart (Appendix 3) and maintain while tube remains in situ.
- Ensure that appropriate training is undertaken and a competency assessment document completed prior to being independent practitioners (Appendix 4).
- Providing their ward manager with evidence of training attended and a completed competency assessment.
- Ensuring clear and accurate documentation in accordance with code of practice regarding all aspects of nasogastric tube insertion and care, including reporting adverse events on Datix.
- Deciding with the multidisciplinary team when the tube should be removed, removing the tube and documenting the outcome.
- Ensuring that patients discharged with an NGT have themselves or their carers received appropriate education, teaching and supervision, advice and competency assessment.
- Make appropriate referrals to community nursing teams and dietetic services.

5.7 Radiographer is responsible for:

- Ensuring that exposure of the x-ray is adjusted to allow the tip of the nasogastric tube is visible at the bottom of the film
- Adjusting the x-ray film to show the bottom of both hemi-diaphragms in the midline and as much of the abdomen as far as possible below the diaphragm.
- Contacting the clinical team if the tube is observed to have been misplaced and request that a competent clinical person removes the tube in Radiology before they are discharged back to the clinical area.

5.8 Radiologist is responsible for:

- Reporting the X-ray within operating hours, ensuring the report includes the following:
  1. The NGT follows the oesophagus and avoids the contours of the bronchi
  2. The NGT clearly bisects the carina or bronchi
  3. The NGT crosses the diaphragm in the midline
  4. The NGT tip is clearly visible below the left hemi-diaphragm
- Clearly documenting the tube position stating whether it is safe to proceed with the

administration of any liquids via the tube.
- Requesting that the tube be removed immediately if the tube is positioned in the airway or repositioned if in the oesophagus.
- Provide an expert opinion to ward clinical team when needed.

5.9 Dietitians are responsible for:
- Nutrition assessment of patients considered for artificial nutrition and advice on the appropriateness of enteral feeding and the goal of feeding.
- Calculating nutrition and hydration requirements, devising an individual feeding regimen and monitoring and revising plan as necessary.
- Contributing to the assessment of risks associated with preparing patients who require feeding at home
- Registering patients for Home enteral feeding, ordering feeds and equipment.
- Liaising with the community nursing team prior to patient discharge

5.10 Speech and Language therapist are responsible for:
- Assessing patients who have been referred to the service, documenting eating and drinking ability, diagnosis of swallowing problems and provide a treatment plan.
- Participating, where appropriate, in the decision as to the appropriateness of enteral tube feeding.
- Regularly monitoring patient in order to advise the MDT regarding appropriateness of reinstating feeds

5.11 Pharmacy are responsible for**:**
- Providing a medicines information service for staff, patients and carers
- Advise and monitor the safe, effective and economic use of medicines used for enteral administration for patients unable to take medicines orally.
- Document any individual patient instructions for staff, patients and carers electronic patient records.

5.12 Student Nurses are responsible for:
- Reporting any patient changes or problems with the enteral feeding tube to the Registered Nurse.
- Administering prescribed feed and water flushes according to the Dietitian's regime under the direct supervision of a Registered Nurse.

5.13 Health Care Assistants are responsible for
- Reporting any patient changes or problems with the enteral feeding tube to the Registered Nurse.

5.14 Theatres are responsible for**:**
- Ordering and maintaining stock levels of NGT.
- Supporting insertion of nasogastric feeding tubes.
- Ensure tube placement is fully documented including make, size, confirmation of tube placement and internal measurement of feeding tube)

5.15 Purchasing and stores department are responsible for:
Ordering and maintaining stock levels of pH strips as well as nasogastric tubes that meet the

following criteria:

- CE marked
- Size /6Fr/8Fr/10fr are the most commonly used sizes in paediatrics
- Fully radio-opaque (NPSA 2011)
- Externally visible centimetre markings to enable accurate measurement, identification and documentation of their position (NPSA 2011).
- Universal Enfit connectors
- Polyurethane material

Any changes to the enteral feeding tube purchased should be confirmed with the Nutrition Support team.

6.0 Policy

6.1 Indications for placing oro/nasogastric feeding tube

NGT can be used for the administration of feeds, fluid or medication into the stomach. NG tube feeding should be considered for patients with a functioning gastrointestinal (GI) tract who:

- Are malnourished.
- Require short-term tube feeding (up to 6-8 weeks).
- Are unable to fulfil their nutritional requirements with normal/modified diet/nutritional supplements.
- Have an unsafe swallow
- have increased nutritional requirements e.g. sepsis, trauma, post-op stress

Nasogastric feeding can be used for short- or long-term feeding.

Orogastric tubes

An orogastric tube may be used for babies requiring:

- nasal prong continuous positive airway pressure (CPAP),
- whose airway would be compromised if a nasogastric tube was inserted
- child who has a suspected or confirmed basal skull fracture.

To obtain an estimated measurement of the length of the tube to be inserted a measurement is taken from the child's lips rather than the nostril. All techniques and precautions used for a nasogastric tube apply to patients with orogastric tubes. Securing the tube can be more difficult, the tube should be secured to the chin with hypo-allergic tape.

6.2 Decision making and assessing risk

Decision to feed the patient via a nasogastric tube must be made by senior medical staff responsible for the patient's care following a risk assessment (NPSA 2011).

The following need to be considered

- Is nasogastric tube feeding the right decision for this patient?
- Is this the right time to place the nasogastric tube and is the appropriate equipment available?
- Is there sufficient knowledge/expertise available at this time to test for safe placement of the nasogastric tube?

A decision needs to balance the risks to the patient of tube placement with the need to feed, ensuring there are no contra-indications to passing a nasogastric tube. These include:

- Anatomical deformity
- Trauma
- Recent oral, nasal or oesphageal surgery
- Basil skull fracture

In these situations, or if any of the above are suspected, senior clinical help should be sought and nasogastric tube insertion should only be attempted under fluoroscopy. Nasogastric tubes should

only be placed when senior support for placement and placement confirmation is readily available. If there are not sufficiently experienced staff who can accurately confirm nasogastric tube placement then unless clinically urgent placement should be delayed until support available.

Risk factors that can increase the chances of NGT misplacement, where the tube maybe inserted in the trachea, bronchus, pleura, oesophagus or oropharyngeal pouch, at the time of insertion:

- Dysphagia
- Uncooperative behaviour
- Low GCS
- Impaired cough/gag reflex
- Neurological impairment
- ET or tracheostomy tubes
- Anatomical abnormalities

In these cases, the procedure may still be indicated, but the healthcare professional inserting the tube must assess the risk and consider inserting the NG tube when there is senior help available and ensure that the procedure is undertaken with two members of staff.

Following insertion an NGT insertion sticker should be completed and fixed in medical notes. Documentation should be in line with the NMC code.

6.3 Complications

Complications associated with tube placement may include: discomfort, trauma to mucus membrane, tube entering the airway (misplaced tube), gagging and vomiting. Less common are instances of oesophageal preformation, pneumothorax (associated with a misplaced tube) and extremely rarely, intracranial placement (associated with basal skull fractures). Complications associated with long term tube placement include; accidental tube removal (patient or health care professional), erosion / ulceration of the soft tissue of the nose where the tube is secured, pulmonary aspiration if the tube is dislodged or the patient with dysphagia experiences reflux/regurgitation.

6.4 Consent and information giving

Where possible a multidisciplinary approach should be taken when deciding on the appropriateness of enteral feeding for a patient. For severely debilitated patients, the ethical, medical and legal implications of long-term tube feeding need to be considered.

An explanation of the reason for feeding and the procedure needs to be given to the patient and family using language and communication methods that support their understanding so that a valid informed consent, written or verbal can be obtained (NHSI 2016).

The following risks need to be included in the discussion and balanced against the risks of not placing the NG tube: nasal discomfort and retching during insertion, accidental placement into the respiratory tract which could result in pneumothorax, pleural effusion, bleeding or chest infection, oesophageal or gastric perforation.

The patient/parents' consent must be recorded in the patient's notes, in compliance with Ashford and St Peters Foundation NHS Trust Policy. The following principles (DOH 2001), should be considered:

- Children under the age of 16 can consent to their own treatment if they're believed to have enough intelligence, competence and understanding to fully appreciate what's involved in their treatment. This is known as being Gillick competent

- Everyone aged 16 or older is presumed to be able to give consent for themselves, unless they have been assessed by their doctor/healthcare professional as incapable of understanding the proposed treatment.
- If children or young people aged under 18 years of age are not able or willing to give consent for themselves, someone with parental responsibility may do so on their behalf.
- Children under 16 cannot, refuse treatment if it has been agreed by a person with parental responsibility or the court, and it is in their best interest.
- By law, healthcare professionals only need 1 person with parental responsibility to give consent for them to provide treatment.
- If a parent refuses to give consent to a particular treatment, this decision can be overruled by the courts if treatment is thought to be in the best interests of the child.
- Where treatment is vital and waiting for parental consent would place the child at risk, treatment can proceed without consent.
- If agreement about a particular treatment or what's in the child's best interests cannot be reached, the courts can make a decision.

6.5 Tube selection and equipment

All nasogastric tubes used for administration of feeds, fluids and medication must have the following criteria: -

- CE accredited
- Fully radiopaque
- Externally visible centimetre markings along the length of the tube
- Appropriate length for the purpose of the tube
- Enfit connector
- Polyurethane material
- Appropriate lumen size for purpose, considering patients age, size and intended use of tube.

PH indicator paper must be CE marked and intended by the manufacturer to test human gastric aspirate, recording. The pH paper available within the Trust are confirmed to be compliant: pH2-9 Enteral GB

Ryles tubes should **NOT** be used for enteral tube feeding due to their size and rigidity and are not compatible with feeding systems. They can cause lower oesophageal sphincter incompetence leading to reflux and aspiration and have a higher incidence of gastric perforation. If a patient has an existing Ryles tube in place it must be changed to a feeding tube as soon as possible.

6.6 Insertion of Naso/orogastric tube

Nasogastric feeding tubes should not be placed unless the decision has been fully documented electronic patients records (verbal request is not acceptable).

Nasogastric feeding tubes should not be electively placed at night as there may be insufficient experienced staff who can accurately confirm nasogastric tube placement. Unless clinically urgent placement should be delayed until support is available. The risk assessment and rationale for this decision should be documented in the patient's notes (NPSA 2005, NPSA 2011, NHSI 2016)

Once the reason for tube placement has been documented on electronic patient records and consent obtained the nasogastric / orogastric tubes should be inserted by

- A registered healthcare professional who has undergone appropriate training and is deemed competent in the skill.

- A health care practitioner in training who is fully supervised by a competent professional.
- Older patients/parents/carers that have been trained in the skill and deemed competent in passing and testing Nasogastric tubes.

Nasogastric feeding tubes must not be placed by unregistered healthcare professional or healthcare professionals (including Bank and Agency staff) who do not have evidence of competency assessment.

The healthcare professional undertaking feeding tube placement must make an assessment to identify potential contraindications or cautions to bedside placement using the decision and LocSSIP guidance Unsuccessful feeding tube insertions must also be documented, clearly stating the reason for the unsuccessful attempt and action taken. No more than three attempts should be made at one time. Senior support should be sought in these instances and these should eb documented on the electronic patient records.

Before inserting the tube, the following questions must be reviewed and documented on LocSSIP form (Appendix 5)

- Is Nasogastric tube feeding the right decision for this patient?
- Is this the right time to place the NG tube and is appropriate equipment available?
- Is there sufficient expertise available at this time to confirm correct placement of NGT?
- Has verbal consent been given by the patient?

6.7 Nasogastric tube insertion measurement

Serious harm can occur if a tube from misplaced tubes and traditionally the length of insertion for nasogastric tubes has been determined by the NEX measurement. The accuracy of different methods of measuring the required length to insert an NGT has been explored in recent studies. Many indicating towards the NEMU measurement for infants and children and the NEX plus measurement for older children and adults. Although no clear national guidance has been published to support this altered measurement is being adopted by many trusts in the UK and in guidelines within other countries.

Refer to Appendix 6 for detailed insertion procedure

6.8 Confirming the correct position of a Nasogastric feeding tube (NGT)

The tube should not be used until a pH of between 1 and 5.5 has been obtained and documented OR correct tube placement has been confirmed by a competent Health care professional through x-ray.

6.8.1 First Line test method following initial placement: CE marked pH indicator strips

PH testing is used as the first line test method as recommended by the NPSA (2016). pH indicator strips that are CE marked, intended by the manufacturer to test human gastric aspirate and have clear definition between pH 5-6 (NPSA 2005, 2011) must be used and stored as per manufacturer instructions. A pH between 1 and 5.5 is considered as the safe range. Each test and result should be documented on the appropriate chart (Appendix 3) including incidences where an aspirate was not obtained. With initial test results from placement documented on insertion label or LocSSIP.

Initial checks at time of insertion

- Aspirate a small amount of stomach content using a 20ml-60ml enteral syringe.
- Test the pH of the aspirate using pH indicator strips

- The tube position should always be checked following initial insertion by two health professionals who are trained and deemed competent in the technique through theoretical and practical learning (Appendix 4).
- If pH is above 5.5 **DO NOT FEED.** Follow guidance in decision tree (Appendix 7)

pH greater than 5.5 may be attributed to

- Tube placed in respiratory tract
- Patient on continuous feed causing dilution of gastric contents by enteral feed, placement should be delayed until at least one hour after last feed.
- Patient on medication that increases pH of gastric contents e.g. H2 receptor antagonists, consider delaying medication until after tube placement
- Tube has passed into the duodenum where the pH is higher

No aspirate could be attributed to

- The end of the tube being adhered to the wall of the stomach, try to reposition the tube or insufflate 1-5mls of air via the NGT prior to re aspirating
- The end of the tube is obstructed by debris
- The tube has been inserted too deep and passed through the stomach into the duodenum, re check the estimated insertion length and reposition the tube.
- The tube hasn't been inserted far enough and remains in the oesophagus, re check the estimated insertion length and reposition the tube.
- The tube is misplaced in with in the lung, if this is suspected a decision need to be made as to whether the tube is removed and repassed or the child sent to x-ray.

Limitations of pH testing method

While none of the existing bedside methods for testing the position of nasogastric feeding tubes are totally reliable, there is evidence to suggest that a pH of between 1 and 5.5 can reliably exclude pulmonary placement. It does not necessarily confirm gastric placement of the nasogastric tube and there is a small possibility that the tube is sitting in the oesophagus, which carries a higher risk of aspiration. If a pH of 5.5 is obtained the decision to feed must be reviewed using the decision tree (appendix 7) and actions clearly documented in medical notes. Medications and feeding frequently can affect the pH of the stomach especially patients on proton pump inhibitors. Continuous feeding may prevent the build-up of acid and pH readings greater than 5.5 may be recorded. Gestational age, postnatal age and presence of amniotic fluid in the stomach may also affect the pH. Radiography may need to be used for these groups of patients following clear evidence of troubleshooting using the decision tree (Appendix 7)

6.8.2 Second line test method for confirming initial placement: X-ray

X-ray is used only as a second line test when no aspirate could be obtained or pH measurement has failed to confirm the position of the nasogastric tube

X-ray requests:

- The requesting clinicians must ensure that their contact details are correct
- The request form must clearly state that the purpose of the x-ray is to establish the position of the nasogastric tube for the purpose of feeding. Also state the justification for the x-ray (what the pH measurement is or if the tube was not able to be aspirated), as well at the

external measurement of the feeding tube,

- The radiographer must ensure that the tip of the nasogastric tube can be clearly seen on the x-ray to be used to confirm the tube position.
- X-rays that do not meet the above criteria will not allow accurate interpretation of nasogastric tube placement and should be redone.

Imaging

- The whole of the nasogastric tube including the tip must be clearly seen on the x-ray to be used to confirm tube position.
- The x-ray film must show the bottom of both hemi-diaphragms in the midline and as much of the abdomen as far as possible below the diaphragm.

Interpreting and reporting check x-ray

- The majority of x-rays should be interpreted and nasogastric tube position confirmed by a consultant radiologist.
- The report entered onto PACS should include
    1) The NGT follows the oesophagus and avoids the contours of the bronchi
    2) The NGT clearly bisects the carina or bronchi
    3) The NGT crosses the diaphragm in the midline
    4) The NGT tip is clearly visible >5cm below the left hemi-diaphragm
    5) Statement that the tube is in the stomach and feeding can commence.
- Out of hours X-rays may be interpreted by doctors who have evidence of having been trained and assessed as competent to read chest x-rays for the purpose of confirming correct placement of NGT. Out of hours the responsibility for assessing the position of the tube lies with senior doctors.
- The clinician reporting the x-ray must complete the NG safety sticker or decision and LocSSIP form (Appendix 6) in the patient's medical notes to include:
    - Name of clinician who confirmed the position of the nasogastric feeding tube. Confirmation that an x-ray viewed is the most current x-ray for the correct patient.
    - Date and time of the report
    - Documentation of the four criteria –
        1) The NGT follows the oesophagus and avoids the contours of the bronchi
        2) The NGT clearly bisects the carina or bronchi
        3) The NGT crosses the diaphragm in the midline
        4) The NGT tip is clearly visible >5cm below the left hemi-diaphragm
        5) Whether the tube is in the stomach and feeding can commence.
- If the NGT is found on x-ray to be in the respiratory tract or oesophagus it must be removed in the x-ray department before the patient returns to the ward or the ward may be called to come to x-ray to re-insert or reposition the tube and then re-x-rayed.

6.8.3 Ongoing NGT position checks

The responsibility for ensuring the correct pH checks procedures and NGT position checks must only be undertaken by registered health care professionals, who have evidence of their competency (NPSA 2005, NPSA 2011, NHSI 2016) or by training health professional or parents/ patients who are supervised by a competent registered health professional.

Tube should always be tested:

- Following initial insertion, by two people
- Prior to administration of any medication, water or feed
- following episodes of vomiting, retching or excessive coughing (note that the absence of coughing does not rule out misplacement or migration);

- When there is suggestion of tube displacement (for example, loose tape or portion of visible tube appears longer); position checks, of the mouth, nose and tapes are required regularly and document on Electronic patient records.
- In the presence of any new or unexplained respiratory symptoms or reduction in oxygen saturation.
- At least once every 24 hours - If tube is not being used for feeding

Risk assessment: Administering drugs and medication when a feed is being administered

When the child is receiving a continuous feed, it may not be impossible to obtain an aspirate within the pH range. In this situation, as long as the tube placement has been confirmed at the start of feeding episode and there are no reasons to suspect tube displacement (external tube length remains unchanged, tapes are secure, and the tube is not seen to be coiled in the mouth), it is acceptable to cautiously administer medicines and fluid via the nasogastric tube.

This tube position check must be documented on the tube position check chart (Appendix 4) each time the tube is used,

If there is any doubt about the 'risk assessment' then do not administer via the tube. Discontinue the continuous feed and wait 45 minutes to an hour before re checking the tube (pH). The patient's condition must be monitored and escalated to the medical team if a deterioration in their condition is noted. An x-ray may be needed to exclude tubes that have been displaced into the respiratory tract.

If it is difficult to obtain aspirate any or all of the following should be attempted (also see decision tree Appendix 7): -

- Check the external markings of the tube against recorded length. Changes in external markings will indicate possible migration to the oesophagus or duodenum. It is still possible for migration to have occurred without external change.
- Attempt to push the tube's end away from the stomach wall by inserting 3-5ml of air via a 50ml enteral syringe, down the nasogastric tube.
- Lie the child/young person on their left side.
- Ask the child/young person to take a small drink (fruit squash or juice), if safe to do so.
- Try advancing or pulling the tube back 1-2cm and try again.
- If the patient is nil by mouth, try mouth care as this may promote gastric fluid production

If unsure that the tube is correctly positioned, seek further advice from a more experienced member of staff or remove and re-pass the tube

Preventing aspiration pneumonia: Where possible all patients should be sat up at a minimum of 30 degrees during feeding and for an hour after the feed has finished.

6.8.4 Unsafe methods to confirm tube position.

The following methods must **NOT** be used to ascertain correct placement of nasogastric feeding tubes in the stomach.

- Auscultation of air injected through the feeding tube ('whoosh' test).
- Testing acidity/alkalinity of aspirate using litmus papers.
- Interpreting absence of respiratory distress as an indicator of correct positioning.
- Monitoring bubbling at the end of the tube immersed in liquid.
- Observing the appearance of feeding tube aspirate.

6.9 Care of the skin and nasal passage

Checks the integrity of the nose and the surrounding skin each time the tube is used and document at least every shift, paying particular attention to the position of the tube as it exits the nose and the tape, repositioning, as required to prevent tissue damage. An appropriate pressure relieving dressing should be used under the tube.

6.10 Tube removal

When the tube is no longer deemed necessary and in agreement with the MDT and patient and family, the tube should be removed and documented in the patients notes.

- If possible stop feed pump if a continuous feed is running two hours prior to removal
- Collect equipment: non-sterile gloves, bowl for dirty NG tube and tape, tissues, Adhesive removal product (if needed to help remove tape)
- Perform hand hygiene.
- Put on gloves.
- Remove tube smoothly and swiftly, reassuring the patient throughout.
- Document removal in patients notes.

6.11 Discharging patients with NGT

Where it is deemed appropriate for a child to be discharged home with a nasogastric tube, education should be provided to patients, parents or carers on the correct management and care of the nasogastric tube to ensure safe administration of feeds and medications. They should be given appropriate education and the opportunity to practice under the supervision of a registered health care professional who is assessed as competent to teach the skill. A competency-based assessment should be completed for each caregiver trained and assessed and filed in the patients' medical records. (Appendix 8)

Preparing patients and their carers for home should include:

- why a feeding tube is needed,
- procedures for checking the tube position,
- what equipment is needed and how to look after it,
- how to recognise a misplaced tube and what to do about it,
- preparing feed and medication,
- administering feed and medication,
- how to secure the tube and look after the child's skin,
- when the tube needs to be changed and by who,
- mouth care and hand hygiene
- community nurse referral (see appendix 8)

In addition

- A referral to the community team should be made prior to discharge
- Dietetic referral should be made prior to discharge
- An appropriate risk assessment completed as appropriate, supplied by the community team
- Ensure appropriate supplies are provided to the family
- Any pumps required and ongoing supplies are arranged through the community team and dietitians prior to discharge
- Information on continuing care, what to do if the tube falls out or any issues occurring with the tube following discharge.

7 Training

Healthcare professionals should ensure that if involved with nasogastric tube position checks they have been assessed as competent through theoretical and practical training (NPSA 2011, NHSI 2016)

All registered nurses must receive training and complete an ASPHFT competency assessment document with a practical assessment undertaken by an authorised assessor prior to carrying out the procedure independently. All student nurses must be observed by a competent practitioner when carrying out NGT related procedures.

Doctors may only insert an NGT if they have been trained to do so or are supervised by a competent member of staff.

8 Stakeholder Engagement and Communication

13.1 Key stakeholders involved in the development and consultation of this policy include: The Nutrition Nurse Specialist (Adults), paediatric consultants, Clinical Practice Educator, Senior nursing staff including Matron, paediatric dietitian, speech and language therapist and radiology department.

9 Approval and Ratification

This document has been presented to the paediatric guideline meeting.

10 Dissemination and Implementation

These guidelines will be available on the intranet. They will be globally advertised via trust news networks and disseminated via senior nurses, nutrition link nurses and clinicians. Additional ward-based training will be offered.

11 Review and Revision Arrangements

- This policy will be reviewed every three years by the paediatric… and the nutritional support team
- This document will be reviewed within 3 months of new national guidance or evidence relating to any aspect of this policy being published

12 Document Control and Archiving

Archiving arrangements are managed by the quality department, who can be contacted to request master/archived copies.

13 Monitoring compliance with this Policy

A clinical incident (Datix) risk event form should be completed to report any incidentrelated to NGT care and management, inclusive of near misses or never events. These will be monitored by the Nutrition Steering Committee and reported to the Safety and Quality Group.

Twice yearly audit of compliance with this policy will be undertaken with the support ofClinical Audit, the audit will be reviewed by the Paediatric governance group and the Nutrition Steering Group and where deficiencies are identified; actions will be developed, implemented and monitored by this group.

Measurable Policy Objective	Monitoring/ Audit method	Frequency of monitoring	Responsibility for performing the monitoring	Monitoring reported to which groups/ committees, inc

				responsibility for reviewing action plans
Compliance to training and competency standards Compliance with decision making and consent standards Compliance with x-ray requesting Compliance with NGT position checks	Audit Audit Audit	Twice yearly	Author supported by ward manager and matron	Paediatric governance group, nutritional steering group and the safety and quality committee

14 Supporting References / Evidence Base

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National Patient Safety Agency: *Never Events Annual Report 2009-2010*. Available online at: http://www.nrls.npsa.nhs.uk/resources/collections/never-events/?entryid45=83319

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NHS England Patient Safety Alert *PSA/W/2013/001 Placement devices for nasogastric tube placement DO NOT replace initial placement checks* 2013 https://www.england.nhs.uk/2013/12/05/psa-ng-tube/

NHS Improvement 2016 Resource set: Initial placement checks for nasogastric and orogastric tubes. NHS Improvement. July 2016 https://improvement.nhs.uk/resources/resource-set-initial-placement-checks-nasogastric-and-orogastric-tubes/

NHS Improvement Patient Safety Alert NHS/PSA/RE/2016/006 : Nasogastric tube misplacement: continuing risk of death and severe harm. https://improvement.nhs.uk/documents/194/Patient_Safety_Alert_Stage_2_-_NG_tube_resource_set.pdf

Sorokin R, Gottlieb JE. 2006 Enhancing patient safety during feeding-tube insertion: a review of more than 2000 insertions. JPEN J Parenter Enteral Nutr. 2006;30(5):440-445.

APPENDIX 1: EQUALITY IMPACT ASSESSMENT

Equality Impact Assessment Summary

Name and title:
Policy:

Background • Who was involved in the Equality Impact Assessment
Authors
Methodology • A brief account of how the likely effects of the policy was assessed (to include race and ethnic origin, disability, gender, culture, religion or belief, sexual orientation, age) • The data sources and any other information used • The consultation that was carried out (who, why and how?)

All groups of staff and patients were taken into consideration and there is no bias towards or against any particular group.
Key Findings • Describe the results of the assessment • Identify if there is adverse or a potentially adverse impacts for any equalities groups
There is no evidence of discrimination.
Conclusion • Provide a summary of the overall conclusions
There is no evidence of discrimination.
Recommendations • State recommended changes to the proposed policy as a result of the impact assessment • Where it has not been possible to amend the policy, provide the detail of any actions that have been identified • Describe the plans for reviewing the assessment
This guideline is appropriate for use.

APPENDIX 2: CHECKLIST FOR THE REVIEW AND APPROVAL OF DOCUMENTS

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.
Title of the document:
Policy (document) Author:
Executive Director:

		Yes/No/ Unsure/ NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	**Y**	
	Is it clear whether the document is a guideline, policy, protocol or standard?	**Y**	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	**Y**	
	Is the purpose of the document clear?	**Y**	
	Are the intended outcomes described?	**Y**	
	Are the statements clear and unambiguous?	**Y**	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	**Y**	
	Who was engaged in a review of the document (list committees/ individuals)?		**Paediatric Guidelines committee and senior nursing team.**
	Has the policy template been followed (i.e. is the format correct)?	**Y**	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	**Y**	
	Are local/organisational supporting documents referenced?	**Y**	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	**Y**	
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	**N/A**	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how this will be done?	**Y**	

		Yes/No/ Unsure/ NA	Comments
	Does the plan include the necessary training/support to ensure compliance?	**Y**	
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	**Y**	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	**Y**	**3 years**
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	**Y**	
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	Y	

Committee Approval (insert name of Committee)			
If the committee is happy to approve this document, please complete the section below, date it and return it to the Policy (document) Owner			
Name of Chair	**Alexandra Jones**	**Date**	**19/11/2024**
Ratification by Management Executive (if appropriate)			
If the Management Executive is happy to ratify this document, please complete the date of ratification below and advise the Policy (document) Owner			
Date: n/a			

Appendix 3: Care plan and position check chart

Appendix 4: Competency assessment document

Appendix 5: Decision and LocSSIP form paediatrics

Appendix 6: Insertion procedure

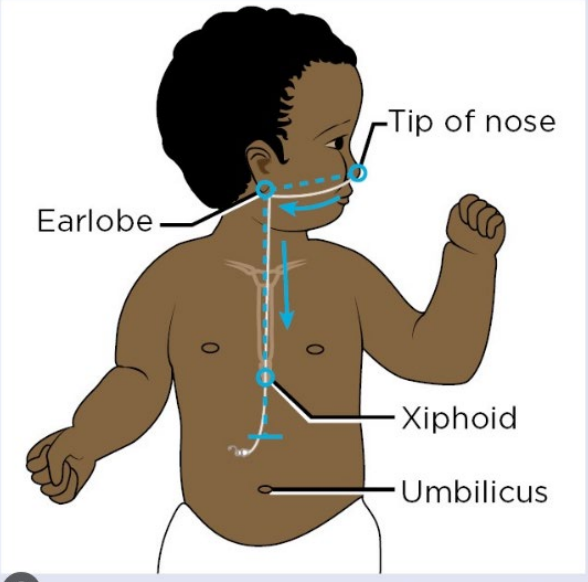
Equipment

Below details the procedure and equipment required for inserting an NGT.

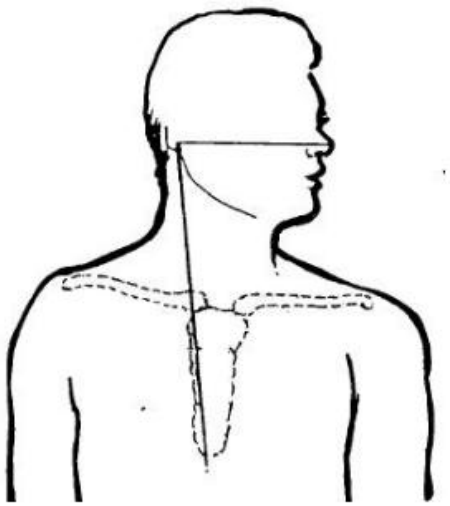
Prepare the following equipment

- Clean tray
- The appropriate size and type of tube
- Sterile water to lubricate the tube
- pH indicator strips
- 20-60ml enteral syringe to withdraw aspirate from the stomach
- Sterile water to flush the tube clear of aspirate, once correct placement has been confirmed
- Non-sterile gloves
- Tape to secure the tube on the child's skin
- Apron

Fig 4. **NEMU measurement**



NEMU = Nose-earlobe-midline of the umbilicus



NEX - Nose to Ear to Xiphoid [23]

Procedure for inserting an NGT

Action	***Rationale***
1. Provide the child and family with adequate information on the reasons and need for enteral feeding and the procedure to be performed.	To ensure the child and family understands, are able to co-operate (depending on age) and has given verbal consent. Consent must be documented in the child's medical notes

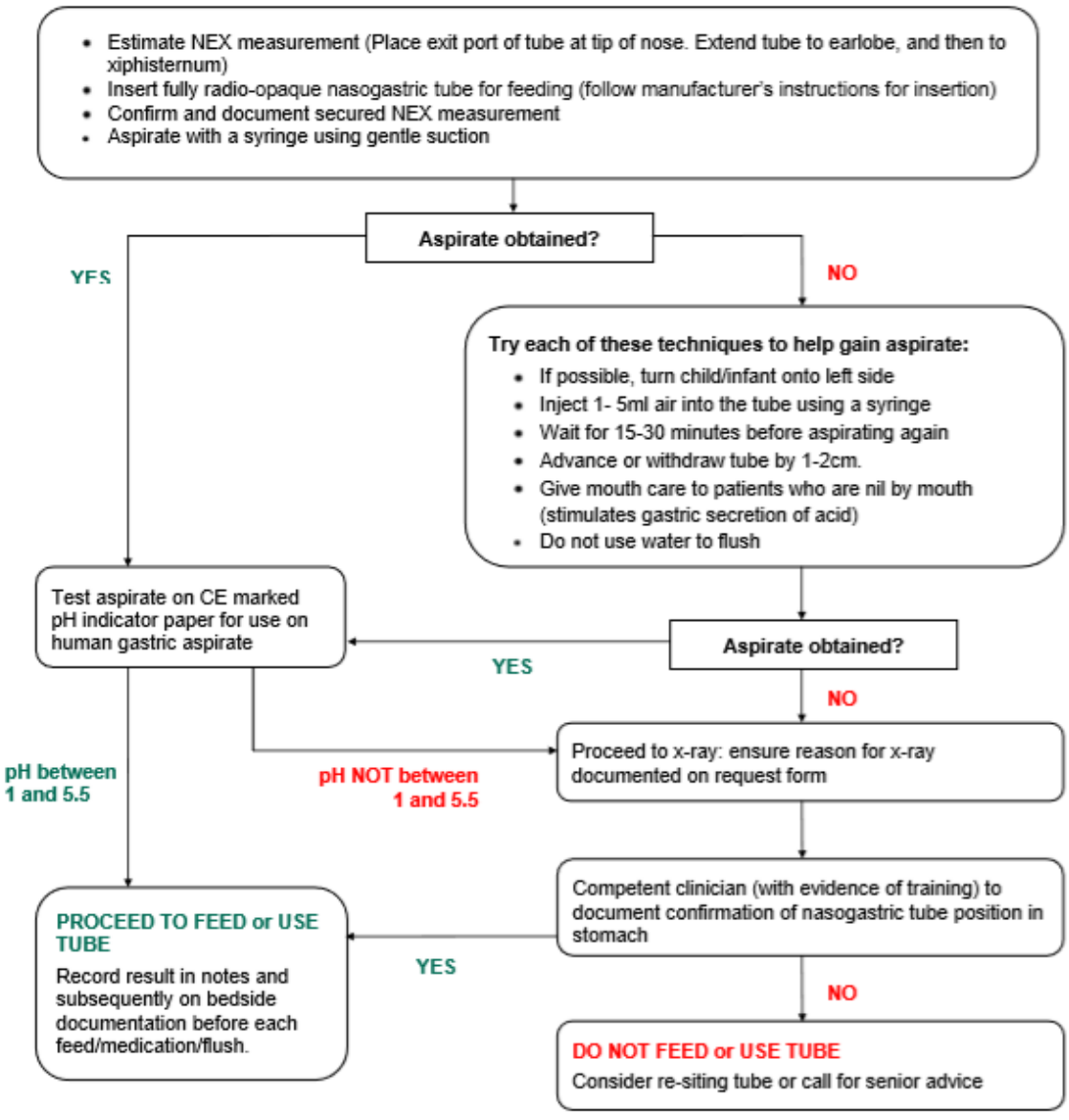
2. Find the most appropriate position for the child, depending on age and ability to co-operate. For example, an older child may be able to sit upright with support to their back and head. Younger children may sit on a parent/carer(s) lap, or an infant may be wrapped in a sheet or blanket	To allow for easy passage of tube
3. Check the nostrils are clear of debris	To identify any obstructions this may prevent the tube being passed.
4. Wash hands before starting procedure and put on gloves.	To minimise cross infection.
5. Check that the tube is intact. The tube should be stretched to remove any shape retained from being packaged. If the tube has a guide wire make sure it is correctly inserted in the tube and is not bent.	To ensure tube is intact and ease the removal of the guidewire following insertion.
6. Measure the length of tube to be inserted. Measure from the tip of the nose to the ear lobe, then from the ear lobe to xiphisternum. The length must be marked with indelible pen or a note taken of the measurement marks on the tube	This length indicates how far the tube will need to be advanced to reach the correct position. **See section 6.7**
7. Lubricate the tip of the tube with sterile water, **DO NOT USE LUBRICATING JELLY**	This makes it easier to pass the tube; lubricating jelly may affect the pH reading.
8. Tilt the child's head slightly forward, and gently pass the tube into the child's nostril advancing it along the floor of the nasopharynx to the oropharynx. At this point, if safe to do so, ask the child to swallow a little water or offer a younger child their soother to assist passage of the tube down the oesophagus until the required length of tube has been inserted. Never advance the tube against resistance. If the child shows signs of breathlessness or severe coughing, remove the tube immediately and wait before making another attempt. Lightly secure the tube with tape, or have assistant hold the tube in place until the position has been checked.	Swallowing assists the passage of the tube by closing the glottis enabling the tube to pass into the oesophagus. Lowering the chin assists the passage of the tube. Coughing may indicate that the tube has entered the trachea.

9. Remove guidewire. The guidewire can be removed after confirming tube placement, **NEVER REINSERT THE GUIDEWIRE**	If reinserted the guidewire could puncture the tube and be passed into the trachea/lungs
10. Confirm correct placement of the tube. Before any liquid is introduced. Aspirate a small amount of stomach contents using a 20-60ml syringe. Cover the pH strip with the aspirate ensuring the indicators are completely covered. Wait 10-60 seconds before reading the pH against the guide on the container. For gastric tube a pH of 1-5.5 is considered safe. If unable able to obtain aspirate or pH not in safe range troubleshoot as per decision tree.	To ensure liquids are not administered to the lungs A pH of 5.5 or below will exclude placement in the lungs.
11. Secure the tube, use an appropriate pressure relieving dressing under the tube and secure over with a hypoallergenic tape	
12. Record insertion in medical records, using stickers accompanying nasogastric tube. Or LocSSIP form	To ensure up to date documentation and record of essential information
ONCE NGT IS IN PLACE THE TUBE SHOULD NOT BE FLUSHED, NOR ANY LIQUID/FEED INTRODUCED THROUGH THE TUBE UNTIL THE CORRECT POSITION IS CONFIRMED USING THE 'CONFIRMING THE CORRECT POSITION OF A NGT GUIDANCE'	

Appendix 7 Decision tree

NHS
National Patient Safety Agency

Decision tree for nasogastric tube placement checks in CHILDREN and INFANTS (NOT NEONATES)



A pH of between 1 and 5.5 is reliable confirmation that the tube is not in the lung, however it does not confirm gastric placement as there is a small chance the tube tip may sit in the oesophagus where it carries a higher risk of aspiration. If this is any concern, the patient should proceed to x-ray in order to confirm tube position.

Where pH readings fall between 5 and 6 it is recommended that a second competent person checks the reading or retests.

www.npsa.nhs.uk/alerts

Appendix 8

Nasogastric Tube feeding Competencies for Parents / carers

A separate sheet is needed for each care giver.

When Parents sign, they are confirming they have been given training, practised with supervision (minimum of 5 feeds), accept responsibility and feel competent to perform NGT feeding.

Parent/carer name: …… **Parent/carer signature: …….**

- Prior to sign off, parents/carers and nurses should have a conversation explaining the rationale for each step.
- Any staff delivering the training, education and/or supervision must sign in the table below. Any staff signing below must have a **complete and relevant paediatric NGT competency.**
- This document should be completed over a period of at least more than 24 hours. Please ensure that one RN **does not** observe all feeds and sign.

Statement of competency: Both nurse / parent/ carers must sign and date each observed feed.	**Parent / Carer**	**Nurse**	**Parent / Carer**	**Nurse**	**Parent / Carer**	**Nurse**	**Parent / Carer**	**Nurse**	**Parent / Carer**	**Nurse**
I have been given a demonstration of nasogastric feeding by the Nursing staff including: • Positioning • Skincare										

• Visual Observation of child										
I am aware of the risks associated i.e. potential for milk aspiration, with this procedure. • It has been explained to me what to do if my child coughs, chokes, gags, vomits, becomes unwell or changes colour whilst feeding • I also know what to do if my child vomits and at the same time the nasogastric tube becomes dislodged.										
I can gather the correct equipment to NGT feed my child: • Correct size of syringe • pH paper										
I have been shown the hand washing technique and use this prior to administering feed / medication via NGT. If in hospital I will apply alcohol gel before I start the procedure.										
I have been shown how to check the feeding tube is securely attached.										
I have been shown how to check the feeding tube is in at the correct length and documented.										

I have been taught how to gently aspirate the NGT to check the tip of the NGT is in the correct position (stomach), immediately prior to every NGT feed.										
I have been taught how to test the stomach aspirate on pH paper. I understand the result range on the pH paper must be 1-5.5 If 6 or above I must not feed my child. If my child can take some feed orally, I will wait 10-15 minutes then retest the pH. If remains above 6 whilst in hospital I will inform the nurse caring for my child										
I know what a normal aspirate (clear/milky) looks like and to call for help if green / yellow or blood stained.)										
I understand the correct amount of water to give and know to give water, pre/post feed and between medications.										
Before starting to feed child, I will check the temperature of the milk (not cold or too warm).										
I can remove the plunger and attach the syringe correctly to the NGT prior to commencing feed										

I can ensure the milk flows slowly into child's tummy depending on how high or low I hold the syringe.										
I know how to remove the syringe and replace the cap on the NGT for winding mid feed and at the end of the feed										
I know where to dispose of all the equipment when the feed has been completed at home or in the hospital.										
I will not let anyone else tube feed my child who hasn't been trained to do so.										
I know what to do if the nasogastric tube is pulled out, dislodged or any other concern.										
I know how dispose of all single use items in hospital and how to clean and store syringes and bottles when at home										
Additional Training (e.g. Pump training)										

Nurse/Parent to sign prior to completing NGT feeds without supervision:

	Print Name, Sign and Date
Parent: I have received training, been assessed and feel safe and able to undertake the above competencies. I am willing to take responsibility for feeding my child using a nasogastric tube without supervision.	
Formative assessment Nurse: I have provided the above training to the parent named above and assessed their competence. I consider them ready to take responsibility for feeding their child by NGT without supervision.	

Reviewed by Nurse in Charge: ……. **Nurse in Charge signature: ……**

References

• Guidelines and Audit Implementation Network (2015) Guidelines for caring for an infant, child or young person who requires enteral feeding [online] Available from https://www.rqia.org.uk/RQIA/files/4f/4f08bb34-7955-49ea-adf1-9de807d3da66.pdf [Accessed 31st May 2023]

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• ‘Caring for children and young people in the community receiving enteral tube feeding’, NHS quality improvement Scotland, (Edinburgh: NHS quality improvement Scotland, 2007)

• ‘How to wash your hands’, in ‘NHS Choices’, < https://www.nhs.uk/live-well/healthy-body/best-way-to-wash your-hands/ >, October 2019, [Accessed 31st May 2023]