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Procedure for the insertion of a nasogastric feeding tube, confirmation of correct position and ongoing care (for adults)	
Introduction and Aim The aim of the procedure is to minimise the risk of patient harm caused by misplaced nasogastric feeding tubes and to facilitate safe practice.	
Objectives: To standardise the procedures for: <ul style="list-style-type: none">▪ Passing a Nasogastric tube▪ Confirming the correct position of a Nasogastric tube on insertion and during ongoing care▪ Delegation of tube insertion or care	
Scope This procedure applies to all registered nursing and medical staff in all locations. It also applies to student nurses and medical students who are working under supervision of a competent registered practitioner.	
Equality Impact Assessment	An Equality Impact Assessment has been completed. The Equality Impact Assessment completed for the procedure found there to be a positive impact
Documents to read alongside this Procedure	Insertion, management and removal of nasal bridle fixation device for Naso-Enteral tubes in adults procedure Consent to Examination or Treatment policy Mental Capacity Toolkit
Approved by	Nutrition and Catering Steering Group Nursing and Midwifery Board
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<u>Disclaimer</u>	
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Summary of reviews/amendments			
Version Number	Date of Review Approved	Date Published	Summary of Amendments
1	November 2005		
2	July 2009		
3	March 2012		Reviewed and updated
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5	March 2018		Reviewed and paediatric and neonatal appendices added
6	March 2021		Reviewed and references updated. Visor added into PPE as per Covid recommendations
7	August 2024		Reviewed and Paediatric and neo-natal information removed as procedure now Adult only. References updated. Flow charts amended

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1. Introduction

Nasogastric feeding is the most common method of providing artificial nutritional support in hospital. One of the main risks associated with the insertion of a nasogastric tube is intrapulmonary placement with administration of feed, medication or fluid. This is a Never Event (1).

Although the risk of tubes being misplaced into the lungs during insertion or moving out of the stomach at a later stage is small, the National Patient Safety Agency (NPSA) is aware of a number of deaths and cases of serious harm due to misplaced nasogastric feeding tubes over recent years (2).

Patients can be discharged into the community with a nasogastric feeding tube in place and tube care may be delegated to the patient, relative, or carer. A full multidisciplinary risk assessment must be made and documented, before a patient with a nasogastric tube is discharged from acute care to community and before delegation of care.

2. Statement

The procedure has been produced to support staff in the correct insertion of a nasogastric feeding tube, confirmation of correct position and ongoing care including delegation of care to relatives.

The procedure for insertion of a fine bore feeding tube is based on the guidelines of the British Association of Parenteral and Enteral Nutrition (3). Confirming correct positioning of nasogastric tubes is based upon recommendations of the National Nurses Nutrition Group (4) and the NPSA (2). The procedure for passing a nasogastric tube can also be used for wide bore tubes.

3. Aim

To maintain patient safety and minimise the risk of patient harm caused by misplaced nasogastric feeding tubes through the provision of evidence based clinical guidance.

4. Objectives

To standardise the procedures for:

- Passing a Nasogastric tube
- Confirming the correct position of a Nasogastric tube on insertion and during ongoing care
- Delegation of tube care to relatives or carers
- The safe discharge of patients with nasogastric feeding tubes in-situ

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5. Competence, accountability and responsibility

5.1 Registered Practitioners:

All professionals undertaking this procedure must be appropriately trained and competent registered practitioners, that is:

- Registered Adult Nurse
- Registered Medical staff

The registered nurse must:

1. Have undertaken training in the insertion of nasogastric feeding tubes which includes tube insertion using a manikin
2. Have undertaken supervised practice with a registered practitioner who is competent in this skill
3. Have been assessed as competent in passing a nasogastric feeding tube with a patient on 2 occasions within 6 months post training
4. Keep a documented record of their competence
5. Update their practice every 3 years (to include a one - off assessment of competence)

The practitioner is accountable for their own practice. Evidence of continuing professional development and maintenance of competence level will be required.

5.2 Students:

Student nurses can practice this skill under the direct supervision of a competent registered practitioner who meets the above criteria-refer to the All-Wales Practice Learning Framework. Medical students can practice this skill under the supervision of a competent, registered practitioner.

5.3 Patients and relatives:

In preparation for discharge, patients and relatives can be trained in daily care of the nasogastric tube if they have been assessed as competent by a registered healthcare professional who is trained and competent in this skill.

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6. Indication

Prior to passing a nasogastric feeding tube a risk assessment must be carried out, balancing the potential risks of tube insertion against the need to feed. The plan for insertion of a nasogastric tube must be documented by the medical team in the medical notes prior to insertion of the nasogastric tube.

Placement should be delayed if there is not sufficient experienced support available to accurately **place and confirm** nasogastric tube placement (e.g. at night). Unless clinically urgent, placement should be delayed until that support is available. The rationale for any decisions made must be recorded in the patient's medical notes.

7. Consent

Informed verbal consent for the procedure must be sought under the guidance of the UHB Consent to Examination or Treatment Policy. Consent must be documented in the medical notes. Consent training is mandatory and staff involved in NG insertion must complete the Consent mandatory e-Learning on ESR.

Please refer to the Mental Capacity Act toolkit (UHB Mental Capacity Act intranet page) for guidance on how to assess mental capacity if you suspect the patient does not have the capacity to provide their consent and the actions to be taken e.g. a best interest decision. Please use the documentation provided in the Mental Capacity Act Toolkit to document mental capacity assessments and best interest decisions.

8. Contraindications

Base of skull fracture is an absolute contraindication for nurses to insert nasogastric tubes unless a local policy and training is in place.

The following are possible contra-indications for the insertion of a nasogastric feeding tube:

- unstable cervical spine
- maxillo-facial surgery, trauma or disease
- oesophageal tumours, strictures or surgery
- haematological disorders/abnormal coagulation

The contraindications are not all absolute, but individual patients must be discussed with the medical team in charge of their care before a tube is passed. Some patients may require tubes placed using direct vision, endoscopic or radiological guidance.

9. Type of tube

Fine bore nasogastric tubes are used for enteral feeding in the UHB and are available in a variety of sizes. These tubes can be used for up to 28-90 days depending on the type of tube used.

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Wide bore (≥ 12 fg) tubes are primarily used for gastric aspiration and decompression but can be used for feeding in the Critical Care Department. They are associated with the following potential complications:

- rhinitis
- pharyngitis
- oesophageal ulceration (5)
- Increased tendency for reflux (6)
- gastric erosions and bleeding
- patient discomfort
- difficulty in swallowing

Wide bore (>12 fg) tubes are made from polyurethane and ideally should only be in situ for a maximum of 28 days to maximise comfort and minimise harm. Contact the Nutrition Support Team for advice if the NG tube is required for longer.

Wide bore tubes used for feeding should be changed to fine bore tubes when clinically appropriate and feed tolerance is established to maximise patient safety and comfort. The procedure for confirming correct position must be followed before the wide bore tube is used for feeding i.e. pH testing.

10. Insertion of the tube

The correct procedure for passing a nasogastric tube must be followed. Refer to: Appendix 1.

11. Confirming tube position

The correct position of the nasogastric tube **must** be confirmed following insertion and documented before feeding is commenced. **Nothing** must be introduced down the tube before gastric placement is confirmed i.e. do not flush with water.

The correct position of the nasogastric tube must also be confirmed and documented:

- Before each bolus feed, administration of medicines or after rest periods
- Following vomiting, violent coughing or retching episodes
- At least once during continuous 24 hour feeding
- Following evidence of tube displacement (change in external tube length, loose tape)

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11.1 Methods recommended following insertion

a. Aspiration and testing with pH indicator strips:

- This is the preferred method to confirm tube position (4)
- A pH of **5.5 or below** is acceptable as indicating gastric placement in most patients. There is evidence to suggest that a pH reading of between 1 and 5.5, can reliably exclude *pulmonary* placement of the nasogastric tube
- If pH of 5 – 5.5 is obtained but the procedure was difficult e.g. patient was coughing or vomiting during the procedure, a chest x-ray is also recommended.
- Medication may affect gastric acidity (11) including proton pump inhibitors, H₂-antagonists and antacids. The pH of aspirate obtained on initial placement must be documented for future reference.
- The pH indicator paper used must be intended by the manufacturer to test human gastric aspirate (2). The pH strips used in the UHB are available by ordering via Oracle.

b. Radiography:

- A chest x-ray must be requested if unable to obtain gastric aspirate or the pH is greater than (>) 5.5 on initial insertion. The x-ray request form must be marked as **urgent** and the film reviewed as soon as possible. The time of tube insertion must be documented on the x-ray request form as this will assist Radiology to prioritize investigations to be undertaken. An urgent x-ray should be undertaken within 4 hours of the request.
- X-rays must be interpreted and nasogastric tube position confirmed by a Healthcare professional assessed as competent to do so. If there is any difficulty in interpretation of the x-ray, the advice of a radiologist must be sought.
- Remote reviewing of an x-ray must be followed up by a review of the patient and appropriate documentation in the medical notes before the tube is used for feeding.
- A nasogastric tube identified to be in the lung must be removed immediately.
Note an x-ray only confirms the position at the time the image was taken.

In order to determine whether a nasogastric (NG) tube is in a safe position for feeding, the following questions must be answered;

- **Can I identify the carina?**
- **Can I see the tube bisect the carina?**
- **Can I identify the diaphragm and see the tube passing below it?**

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- **Which way does the tube pass below the diaphragm?**
- **Can I see the tip of the tube?**

A flowchart for the procedure for confirming correct position of a nasogastric tube can be found on page 17. A summary of the rationale for can be found in appendix 4.

11.2 Confirming correct position during ongoing care

Radiography **should not** be used routinely for daily confirmation of tube position due to increased exposure to radiation, impracticality, costs and disruptions to feeding (1). An individual risk assessment must be carried out for each patient.

- If unable to aspirate and the patient has a safe swallow, ask the patient to drink an easily identifiable fluid. If this is then aspirated from the feeding tube, check pH to confirm correct position.
- If the measurement of the tube length remains unchanged and the patient's clinical condition is unchanged then this would support the view that the tube is still correctly positioned. Avoid testing pH after administration of medication or while feed is in progress.
- The practitioner should apply clinical judgement and expertise combined with these considerations in deciding if the tube is correctly positioned, particularly when the correct pH cannot be obtained. If there is no reason to suspect tube displacement since initial insertion, i.e. no vomiting, retching or coughing or unexplained respiratory symptoms, the only practical way of determining if the tube remains correctly placed prior to each administration of feeds or medications, is confirmation that the external tube length remains the same and that the fixation plasters have not become loose. If patient is combative consider Ph and tube length checking more regularly.

NB: An individual risk assessment should be carried out for each patient. For example, if the pH is constantly higher than 5.5 on each occasion the tube is aspirated, but on x-ray the tube is found to be correctly positioned, then it could be accepted that for this patient a pH of >5.5 is 'normal' and feeding can continue. This should be clearly documented.

12. Securing the tube

The tube must be well secured to the patients' nose and the cheek corresponding to the nostril used.

Consider any allergies and sensitivities to the tape when selecting an appropriate product. Additional fixation devices i.e. nasal bridles are available from the Nutrition Support Team. The use of hand mittens can also be considered but a DOL's must be in place before they can be used.

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13. Documentation

The pre-printed sticker provided by the manufacturer must be used to standardise documentation.

The result of pH testing must be documented on the daily care record (page 19) and must include:

- date and time
- whether aspirate was obtained
- what is the pH of the aspirate
- who checked the aspirate pH

Documentation following x-ray must include:

- date and time
- patient ID
- who authorised the x-ray
- who confirmed the position of the tube
- confirmation that the x-ray viewed was the most current for the patient
- rationale for the confirmation of position of the nasogastric tube i.e. how placement was interpreted. This must be documented in the medical notes

14. Resources

This procedure is a revision of existing guidelines within the UHB. There are minimal resources required for implementation. All nasogastric tubes are available through CSSD. pH indicator strips are available by ordering via Oracle.

15. Training

The Adult Nutrition Support Team provide an education and training program “Passing a fine bore nasogastric tube”. This is open to qualified nursing staff and is booked through the Nutrition Support Team: Nutrition.Nurse.Cav@wales.nhs.uk. The NG insertion video is available on the Nutrition and Dietetics Sharepoint page.

16. Arranging the discharge of patients with nasogastric feeding and delegation of care to patients, relatives and carers

Patients in adult health areas can be discharged home with enteral feeding via a nasogastric tube in place and elements of care can be delegated to the patient or a relative / carer.

16.1 The Discharge Process:

The decision to feed at home is made by the multidisciplinary team and will need to be documented in the patient’s medical notes. The discharge will be coordinated by the Dietitian and the ward nurse responsible for the patient’s care.

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16.2 Delegation of Care:

The following aspects of care can be delegated to the patient / relative / carer:

- a. confirmation of tube position
- b. setting up and administration of feed
- c. administration of medicines

Training can be provided by Abbott, Nutricia, Nutrition Nurse Specialist or ward nurse.

Standard 11 of the Nursing and Midwifery Council (NMC) 'The Code' states that in order to practise effectively Registered Nurses and Midwives must:

Be accountable for your decisions to delegate tasks and duties to other people

To achieve this, you must:

- 11.1 only delegate tasks and duties that are within the other person's scope of competence, making sure that they fully understand your instructions
- 11.2 make sure that everyone you delegate tasks to is adequately supervised and supported so they can provide safe and compassionate care, and
- 11.3 confirm that the outcome of any task you have delegated to someone else meets the required standard

For this reason, registered Nurses will be responsible for ensuring that the person to whom they are delegating nasogastric feeding care:

- a. is clear about their role and responsibilities
- b. receives the training that they require
- c. demonstrates their competence through a documented assessment
- d. receives the support that they require at home

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17. Responsibilities

Healthcare professionals must ensure that they have undertaken the required training and assessment of competence prior to being involved in nasogastric tube placement and confirmation of position.

Nasogastric tube insertion assessors and ward managers are responsible for recording competence in local records. Training provided by the Nutrition Support Team will be recorded on the ESR system and completed competencies must be sent to ECOD.

Individual directorates are responsible for implementing the procedure. The Nutrition Support Team will continue to provide the training and support of staff undertaking the procedure in adults.

Incident forms must be completed for misplaced nasogastric feeding tubes or other adverse events associated with their use and the incident escalated through the appropriate directorate channels. Serious clinical incidences must be escalated to the Patient Safety and Quality Department e.g. feeding via a misplaced NG tube, pneumothorax, and perforated oesophagus.

18. Implementation

The procedure will be circulated to all clinical areas and will be available on the UHB Sharepoint page. Adherence to the procedure will be audited on an ad hoc basis by the Nutrition Support Team.

19. Equality Impact Assessment

An Equality Impact Assessment has been undertaken to assess the relevance of this procedure to equality and potential impact on different groups, specifically in relation to the General Duty of the Race Relations (Amendment) Act 2000 and the Disability Discrimination Act 2005 and including other equality legislation. The assessment identified that the procedure presented a low risk to the UHB.

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APPENDIX 1: Process for passing a nasogastric feeding tube and confirming the correct tube position in Adults

Equipment

Fine bore tube of appropriate size
pH indicator paper
Nose plaster or appropriate tape/scissors
Non-sterile gloves
Apron
60 ml enteral syringe
Glass of water (if appropriate)
Tissues
Receiver
An assistant

Procedure

1. Prepare the patient for the procedure:
 - Screen bed area
 - Explain procedure and rationale
 - Where appropriate obtain verbal consent and document
 - Clean/clear nostrils and provide oral care or drink if appropriate
 - Position patient (semi-recumbent, head tilted slightly forward, unless contraindicated)
 - Agree signal with patient to pause/stop the procedure if necessary
2. Wash hands according to UHB infection control guidelines, put on gloves and apron
3. Examine tube, check expiry date, size, length and integrity, ensure the guide-wire moves freely.
4. Measure the length of the tube required Nose, Ear, Xiphisternum (**NEX**) and note length. In adults - nose to earlobe to xiphisternum is usually 50-65 cm.
5. Do not lubricate the tube with water or any lubricating agents.
6. If appropriate, i.e safe swallow, provide the patient with a glass of water.
7. Insert the tip of the tube into the nostril, along the floor of the nasal passage into the oropharynx (throat), ask the patient to swallow and tilt chin down slightly, unless this is clinically contraindicated.

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9. Advance the tube gently and encourage the patient to swallow until the tube reaches the NEX measurement.

If the patient shows signs of distress e.g. excessive coughing, gasping or cyanosis, the tube must be removed immediately. Referral must be made to a senior member of the medical team who will review the situation and determine what action is necessary. This may include referral for assistance from the Nutrition Support Team or other appropriate clinical team. Out of hours, the responsible clinical team must risk assess further attempts at insertion versus delay in provision of enteral nutrition.

10. Confirm correct position of nasogastric tube.

Procedure to confirm correct position following insertion:

- Use a 60 ml enteral syringe and aspirate a small amount of fluid
- Place aspirate on pH strip and leave for 30 seconds
- A reading of **5.5 or below** indicates gastric placement

If aspirate is greater than 5.5:

- Wait 30 minutes and retry
- If pH remains greater than 5.5 a chest x-ray must be requested
- X-ray on initial placement is also advisable in patients in whom the procedure was difficult i.e. coughing/vomiting or if there is any doubt regarding the pH obtained

If aspirate is difficult to obtain try some or all of the following:

- Check the syringe size - must be ≥ 20 ml
- Check the tube is inserted to correct length as measured (NEX)
- Try advancing or withdrawing tube 5 -10 cm
- Flush tube with air. Use 5-10 ml of air DO NOT use water
- Give the patient a drink if appropriate (i.e. safe swallow)
- Position the patient on their left side- unless clinically contraindicated
- Wait up to 30 minutes and retry

If all attempts to obtain gastric aspirate fail on initial placement, a chest x-ray must be requested.

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Following confirmation of position:

11. To remove the guide-wire, flush 5 ml of water through the tube using a 20 ml or 60ml enteral syringe. Hold the tube firmly at the nose and carefully remove the guide-wire.

Never re-insert the guide-wire whilst the tube is in the patient.

12. Secure the tube by taping around the tube and across the nose. Position the tube to the corner of the nostril. Additional tape should be used to secure the tube to the patient's cheek.

13. Dispose of waste according to UHB policy.

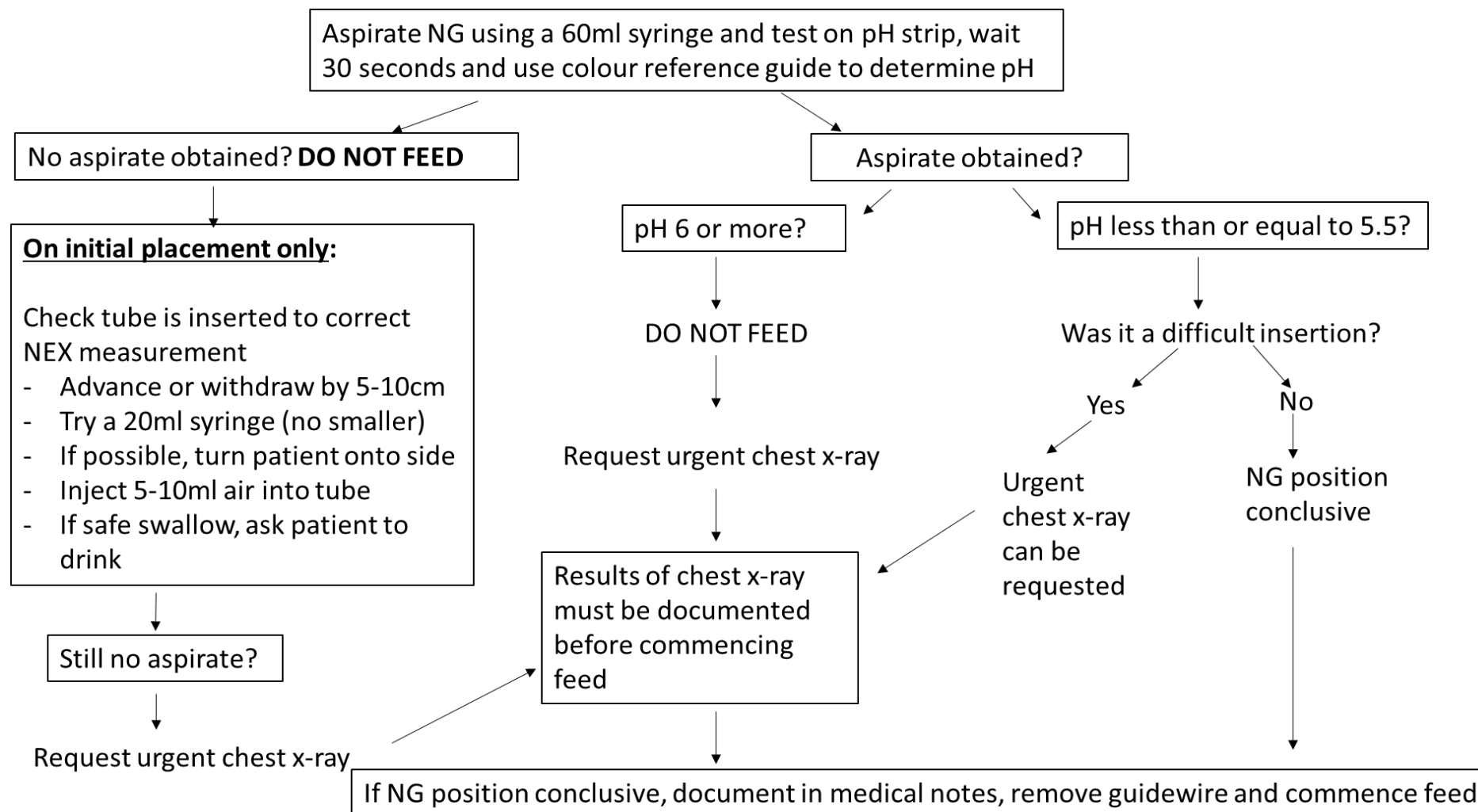
14. Document consent, the procedure and method of confirming correct tube position including the person undertaking the procedure in the medical notes using the pre-printed sticker in the medical notes.

Procedure for ongoing care of a patient with a nasogastric tube

- Check tube position prior to giving feeds/drugs as per previous instructions. Record daily NG checks on the nasogastric daily care record (page 19).
- If on continuous feeding, stop feed and flush tube with 5-10ml of air prior to aspiration, use clinical judgement and surrogate measures (tube length etc) to decide if tube is correctly positioned if pH > 5.5.
- If unable to aspirate/obtain correct pH use clinical judgement and surrogate measures (tube length etc) to decide if tube is correctly positioned.
- Flush the tube with water before and after feeding, before and after medication and between each medication.
- Adults that are immuno- compromised, critically ill or who have a tracheostomy and are nil by mouth should have sterile water to flush the NG tube. Freshly drawn drinking water is suitable for other adults.
- Check the securing device on each shift and renew regularly.
- Check both nostrils daily and clean with water as needed.
- Consider changing the tube after 28-90 days depending on tube type.

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Flowchart for confirming correct position of nasogastric feeding tubes on initial insertion in ADULTS



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Flowchart for confirming correct position of nasogastric feeding tubes during ongoing care for **ADULTS**

An individual risk assessment must be carried out for each patient if either no aspirate or aspirate greater than 5.5 is obtained each time the tube is used

Ongoing NG position checks

When: Before administration of feed, medication or flushes; after severe vomiting, retching or coughing episodes; movement of external tube length; deterioration in respiratory function; at least once during continuous 24 hr feeding (Critical care).

How: Aspirate 0.5-1ml using gentle suction with 60ml syringe. Test on pH strip- wait 30 seconds and use colour reference guide to determine pH.

What now?

No aspirate obtained?

Risk assess

- Recheck external measurement
- Inject 5-10ml air into tube
- Try a 20ml syringe (no smaller)
- If possible, turn patient onto side
- If safe swallow, ask patient to drink coloured liquid

No aspirate after all appropriate attempts?

Discuss with medical team – has there been any change in the patient condition or external length of tube? If no, restart feed, if yes consider chest xray.

pH 6 or more?

Risk assess

- Check pH on insertion and subsequent pH
- Check if patient is on any medication that may affect pH i.e. PPI
- Recheck external measurement
- Has patient's condition changed i.e. vomiting or coughing?
- If safe swallow, ask patient to drink coloured liquid

pH 6 or more?

pH 5.5 or less?

NG position confirmed

Risk assessment/secondary confirmation methods used must be documented.

