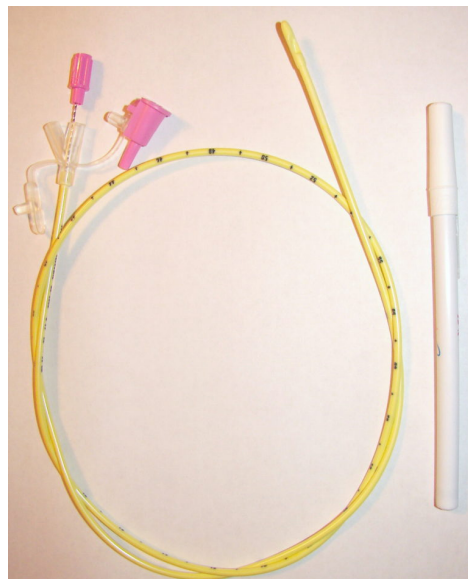
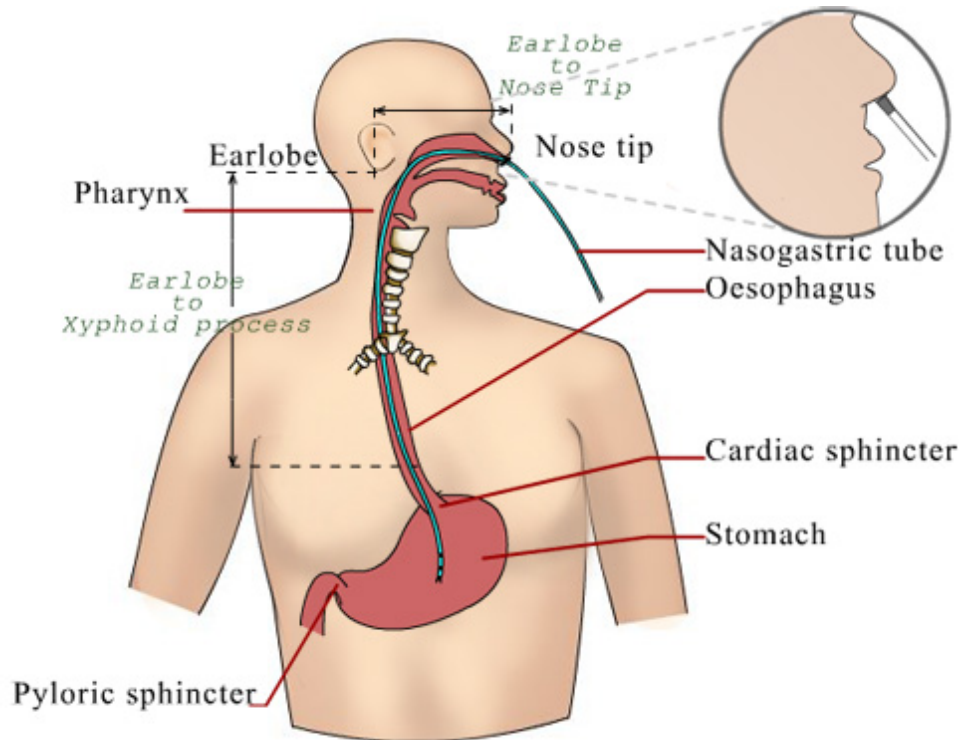




Nasogastric Tube Insertion Clinical Skills Guidance



Learning Objectives:

1. Understand the indications for the insertion of a nasogastric (NG) tube
2. Understand the indications for enteral tube feeding
3. Describe the potential contraindications and complications of NG tube insertion
4. Identify the appropriate equipment required for NG tube insertion
5. Demonstrate the ability to insert a NG tube and confirm placement.

Indications for NG tube:

Feeding purposes

NG tubes should only be used in people who are malnourished or at risk of malnutrition and have:

- Inadequate or unsafe oral intake, and
- A functional, accessible gastrointestinal tract.
- Examples where both stipulations are met include:
 - Neurological conditions causing dysphagia/unsafe swallow such as stroke.
 - Lowered consciousness level such as coma or PVS
 - Following upper gastrointestinal surgery where a high anastomosis must be protected in the initial post-operative period
- Occasionally, NG feeding is used to prepare malnourished patients for major abdominal surgery in the pre-operative period

Medication delivery

- NG tubes can also be used to deliver certain **medications** directly into the stomach of patients with the same stipulations as feeding.

Removal of gastric contents

NG tubes may also be used for **removal** of gastric contents. Examples would include:

- Initial and continued gastric decompression in the endotracheal intubated patients
- Symptom relief and bowel rest in bowel obstruction (the “drip and suck” conservative management – aspiration of stomach contents in conjunction with intravenous fluid administration)
- Aspirating ingested toxic material

Diagnostic uses

- Assessment of the presence or volume of **upper gastrointestinal bleeding**
- Administration of **radiographic contrast**

Indications for Enteral Nutrition

All methods of complex nutritional care have risks and benefits which need to be assessed and discussed with patients (and/or their representatives) if care is to be delivered safely and effectively. Complex nutritional care includes many different techniques and may be delivered in different environments.

Enteral Nutrition Support via an artificial feeding tube should be considered in patients who are unable to maintain an adequate nutritional intake from food, and/or oral nutritional supplements, or who cannot eat/drink safely. Informed consent for enteral tube feeding must be obtained prior to any intervention. If a patient is unable to provide consent for enteral tube feeding, it must be demonstrated that the legal permission has been defined under the Adults with Incapacity (Scotland) Act (2000) or relevant mental health legislation.

For patients who cannot meet their nutritional requirements orally, and where their gut is still functional, enteral tube feeding can provide effective support in both the short and long term. The delivery of enteral nutrition requires access to a range of facilities and skills to ensure safe, effective and person-centred care.

Where feasible, nutrition support should be given via the GI tract which must be accessible and functioning sufficiently to absorb the feed administered. The use of the GI tract should prevent atrophic changes and by stimulating bile flow, preventing cholestasis. The benefit of enteral nutrition over parenteral nutrition is that systemic immunity should be improved and infection risks lowered. Even if only a small portion of the nutritional needs are met via the gut, there will still be physiological benefits.

Enteral tube feeding is not always exclusive and can be used in combination with oral and/or parenteral nutrition. Enteral tube feeding should never be commenced without consideration of all related ethical issues and must be in the patient's best interests. Medical staff should confirm the treatment plan and consider the patient's capacity to give informed consent; wishes of the patient (and/or their representative); ethical issues, including the risks and benefits of any proposed intervention; the patient's ability to meet their requirements without support; and the appropriateness of nutritional support in palliative or end of life care.

The outcome of the assessment and the proposed course of action (for example, no intervention, enteral tube feeding,) and this should be:

- documented in the patient's health record
- used to formulate a plan of care
- regularly reviewed, and
- communicated with the patient (and/or their representative).

Indications for Enteral Tube feeding	Example
Unconscious patient	Head injury Ventilated patient
Neuromuscular swallowing disorder	Post CVA Multiple Sclerosis Motor Neurone Disease Parkinsons Disease
Physiological anorexia	Cancer Sepsis Liver Disease HIV
Upper GI obstruction	Oro-pharyngeal or oesophageal stricture or tumour
GI dysfunction or malabsorption	Dysmotility Inflammatory bowel disease Reduced bowel length
Increased nutritional requirements	Cystic Fibrosis Burns
Psychological problems	Severe depression Anorexia Nervosa
Specific treatment	Inflammatory Bowel Disease Short term access during surgery (head and neck cancer)

Nasogastric Route for Enteral Nutrition- Device/Tube Selection

There are a variety of materials used in the manufacture of nasogastric tubes; Polyvinyl Chloride (PVC), Polyurethane (PUR), and Silicone.

All nasogastric feeding tubes should be radio-opaque with length markers.

- PVC is a non-tissue compatible material as it becomes brittle and it is therefore a short term tube < 7 days, refer to manufacturer's guidelines.
- PUR is tissue compatible and the material of choice in fine bore nasogastric tubes as it remains soft and flexible throughout use, manufacturer's guidelines should be followed.
- Silicone is tissue compatible; manufacturer's guidelines should be followed.

A fine bore tube should be used for nasogastric feeding, this is determined as being between a 6Fr and 12Fr. The benefit of the fine bore is having greater flexibility, nasal comfort and allowing for normal swallowing where appropriate, it also minimises the risk of rhinitis, pharyngitis or oesophageal erosion. The standard feed can be administered through a 6Fr tube but that an 8Fr may be required for a fibre feed. Within NHSGGC the tube size of choice for enteral feeding in adults is an 8Fr or 10Fr.

In some incidences patients in ITU may require the use of a wide bore feeding tube i.e >12Fr. This should be changed to a fine bore NG tube before the patient is transferred out of ITU. However, if on assessment, this cannot be changed prior to discharge from ITU, the wide bore feeding tube may be the SHORT TERM practical option when this has been established in ITU. The position of the wide bore NG tube tip must be confirmed prior to use by a competent practitioner. Referral to the Nutrition Support Team should be made at the earliest opportunity.

Potential Contraindications to Nasogastric Tube insertion

Healthcare professionals will have varying levels of experience in placing nasogastric feeding tubes therefore some contraindications are relative. Advice should be sought and consideration should be made of the following, which is not an exhaustive list:-

- Basal skull fractures
- Unstable cervical spinal injuries
- Nasal/pharyngeal /oesophageal obstruction or ulceration
- Choanal atresia
- Trachoesophageal fistula
- Oesophageal/pharyngeal pouch
- Oesophageal stricture or other abnormalities of the oesophagus
- Oesophageal tumours or have undergone oesophageal surgery
- Oropharyngeal tumours or have undergone oropharyngeal surgery
- Post laryngectomy
- Actively bleeding oesophageal or gastric varices
- Gastric outflow obstruction
- Intestinal obstruction
- Clotting disorders

Professionals should seek clarity on contraindications relative to their area of practice and level of skill. Ensure any relevant investigations are undertaken (where appropriate) e.g. blood clotting tests.

Complications of Nasogastric Tube insertion

The patient should be fully assessed to identify any history of previous nasal fractures, surgery, polyps or other blockages which may complicate nasogastric tube insertion.

- Potential complications which may arise during the insertion procedure include:
- Bronchial placement
- Pleural space placement
- Intracranial insertion
- Gastro-oesophageal junction placement of the tip
- Nasal Trauma
- Pharyngeal or oesophageal pouch perforation
- Precipitation of variceal bleeding

Never force the nasogastric tube if resistance is felt. A maximum of 3 attempts should be made at one time. If the procedure is unsuccessful after 3 attempts stop and seek senior specialist advice.

Reducing the Harm Caused by Misplaced Nasogastric Feeding Tubes

In February 2005, following reports of patient death and harm caused by misplaced nasogastric feeding tubes, the National Patient Safety Agency (NPSA) issued a Patient Safety Alert (05) Reducing harm caused by misplaced nasogastric feeding tubes.

Between September 2005 and March 2010 there were a further 21 deaths and 79 cases

of harm, related to feeding through misplaced nasogastric tubes reported to the National Reporting and Learning System (NRLS). In 2011 the NPSA updated the original alert and issued reducing the harm caused by misplaced nasogastric feeding tubes in adults, children and infants, to provide organisations with strengthened guidance based on the learning from these reports. It is vital that Nasogastric tubes are passed safely into the stomach and that the position is confirmed on initial placement and prior to subsequent use

The position of the nasogastric tube tip must be confirmed prior to use by a competent practitioner and the method of confirmation documented

Procedure for Insertion of Nasogastric Tube

Equipment Required

- Clean tray/trolley
- Disposable gloves
- Apron
- Fine Bore nasogastric tube
- Tissues
- Enteral ISO / Saf syringe (50/60ml)
- Disposable sick bowl
- Sterile water
- Glass of water with straw (if permitted – patient has a safe swallow and not nil by mouth)
- Appropriate securing device/hypoallergenic tape
- CE marked pH indicator strips (to test human gastric aspirate)

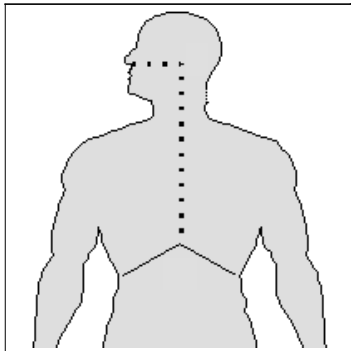
Procedure

1. Social hand wash.

2. Put on apron
3. Explain procedure to patient and obtain consent to proceed.
4. Where possible assist the patient to sit upright with their head well supported and chin tilted downwards.
5. Discuss with the patient non-verbal communication to indicate if they wish to halt the procedure e.g. a hand raise to indicate stop.
6. Ascertain if patient has known nasal obstruction, e.g. previous fracture, polyps, previous surgery. Ensure no contraindications to carrying out procedure. If possible, ask patient to blow nose and check nostrils are clean prior to commencement of procedure.
7. Where necessary carry out oral hygiene prior to commencement of procedure.
8. Clean surface of trolley or tray as per decontamination of equipment procedure.
9. Assemble equipment onto trolley/tray.
10. Apply alcohol rub to hands and allow to dry.
11. Open equipment onto clean surface.
12. Apply alcohol rub to hands and allow to dry.
13. Put on disposable gloves.
14. Check nasogastric tube to ensure all ports are closed. Push guide wire connector firmly onto tube connector. Make sure guide wire connector stays firmly seated

during insertion.

15. Measure the length of tube to be inserted to assure that tip enters gastric region. Place exit port of tube at tip of nose, extend tube around the ear, then to xiphisternum process (this is known as the NEX measurement). Use centimetre (cms) marks on tube for reference. Note the length of tube to be passed.



16. Lubricate the outside of the tube as per manufacturers guidance.

17. NOTE: Throughout passage of the nasogastric tube the patient should be observed for signs of distress, coughing, cyanosis, gasping. Any of these may indicate malposition of tube and the tube should be withdrawn. If any resistance is felt throughout passage of tube, DO NOT FORCE THE TUBE, the procedure should be halted and medical staff informed.

18. Insert the distal end of the tube into the nostril and advance posteriorly along the floor of the nose to the nasopharynx.

19. As the tube passes down into the nasopharynx then oropharynx ask the patient to keep chin tilted forward and take a sip of water if permitted via a straw, to facilitate passage. If the patient is not allowed fluid, ask them to close their mouth and move their tongue around, this is part of the swallow mechanism and may trigger a swallow.

20. Advance the tube until the pre-noted length (NEX measurement) is at the nostril.

21. Check patient's mouth to ensure tube not coiled in mouth, if it is then withdraw until coil not visible. Re advance tube until the pre-noted length (NEX measurement) is at the nostril.

22. Provisionally secure tube at nostril with hypoallergenic tape until position of tube confirmed to be in stomach.

23. If unable to obtain aspirate, remove guide wire (following manufacturers guidance) and re-attempt to obtain aspirate

24. Once position of tube confirmed to be within the stomach AND IF GUIDEWIRE STILL INSITU, REMOVE GUIDEWIRE following manufacturer's guidance. Flush tube with at least 10mls sterile water using enteral ISO/SAF syringe. Close connections on tube.

NOTE: IT IS NOT NECESSARY TO LEAVE GUIDEWIRE INSITU IF XRAY CONFIRMATION IS REQUIRED.

25. Secure tube to nostril and cheek using hypoallergenic tape.

26. Dispose of waste according to NHSGGC Policy.

27. Social hand wash.

28. Document fully

Do not administer anything down tube until position is confirmed. Do not reinsert guide wire when the Nasogastric tube is in the patient.

Procedure for confirmation of position of Fine Bore Nasogastric Tube

Healthcare Professionals are professionally accountable for their own competence, actions and care delivered and are aware who to contact for advice and support as and when required.

NOTE: pH testing is used as the **first line test method** . X-ray is used only as a second line test when no aspirate could be obtained or pH indicator paper has failed to confirm the position of the nasogastric feeding tube

The position of the nasogastric tube should be checked:

- Following initial insertion.
- Before administering each feed.
- Before giving medications.
- Any new or unexplained respiratory symptoms or if oxygen saturations decrease.
- At least once daily during continues feeds. • Following episodes of vomiting, retching or coughing spasms.
- When there is a suggestion of tube displacement.

This confirmation should be fully documented

Equipment

Enteral ISO /Saf syringe (50ml/60ml)

Clean tray/trolley

Disposable gloves and Apron

Tissues

Appropriate securing device/tape

CE marked pH paper (to test human gastric aspirate)

Procedure

1. Social hand wash.
2. Put on apron.
3. Explain procedure to patient and obtain consent to proceed.
4. Clean surface of trolley or tray as per decontamination of equipment procedure.
5. Assemble equipment onto trolley/tray.
6. Apply alcohol rub to hands and allow to dry.
7. Open equipment onto clean surface.

Note: when removing pH indicator strip from the packet, hold the white plastic end. Do not let the three coloured squares touch anything.

8. Apply alcohol rub to hands and allow to dry

9. Put on disposable gloves.

10. Attach Enteral ISO /Saf syringe to connector on NG tube, pull back plunger to aspirate fluid.

Aspirate obtained:

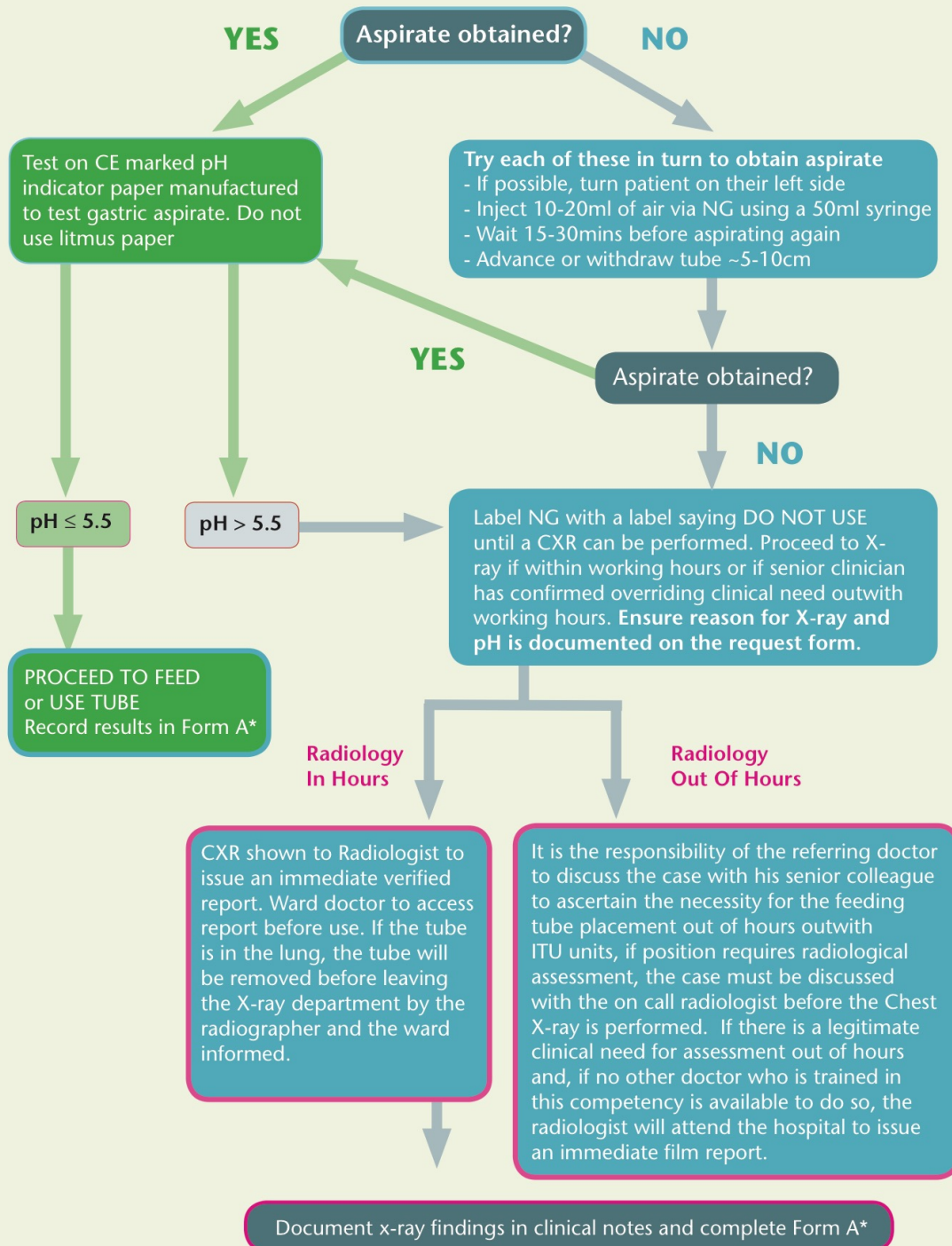
11. Remove syringe and apply aspirate onto CE marked pH indicator strip (to test human gastric aspirate), covering all three coloured squares.
12. Note: only a small amount, 2-3 drops, aspirate is required.
13. Follow manufacturers guidance, for the colour change process to complete and compare pH indicator strip to colour chart on packaging.
14. If $\text{pH} \leq 5.5$ REMOVE GUIDEWIRE IF STILL INSITU and flush tube with at least 10mls sterile water using Enteral ISO / Saf syringe. Proceed to feed or use NG tube for medication/hydration, record result
15. This confirmation should be fully documented in the Nasogastric Feeding Tube Care Plan, if this involves the placement of a new nasogastric tube document this in the Placement bedside checklist. If this is to confirm position of an existing nasogastric tube, document it in the Position confirmation record. OR If $\text{pH} \leq 5.5$

No Aspirate obtained - Refer to appropriate decision tree. NOTE: If unable to obtain aspirate, it can sometimes help if the guide wire is removed (following manufacturers guidance) and re-attempt to obtain aspirate

15. Dispose of waste according to NHSGGC Policy
16. Social hand wash.
17. Record result

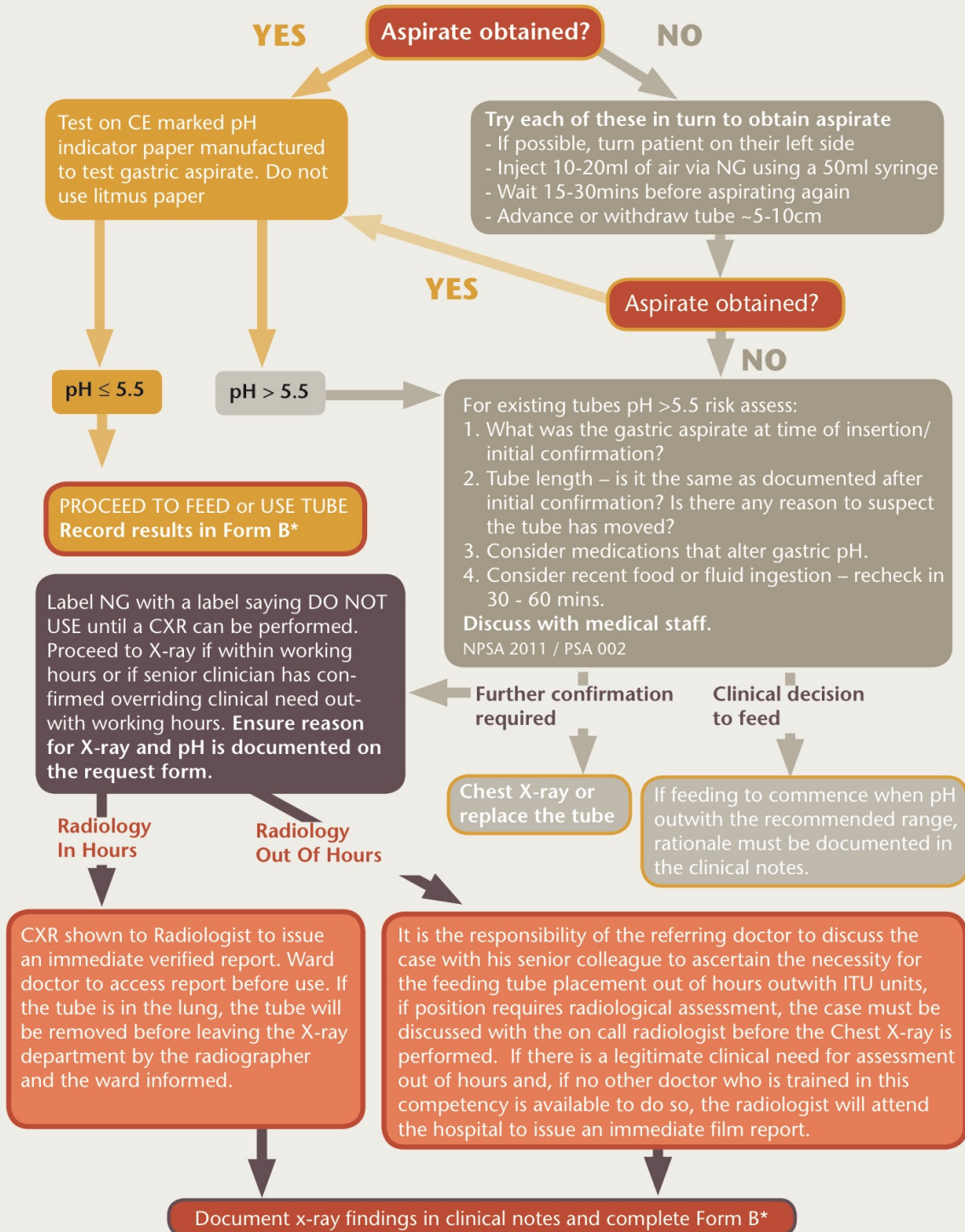
This confirmation should be fully documented

Decision Tree For Confirming Placement Of Newly Placed Nasogastric Tubes For Feeding



* Form A = Nasogastric tube placement bedside checklist

Decision Tree For Confirming Placement Of Existing Nasogastric Tubes For Feeding



* Form B = Nasogastric tube placement bedside checklist

Complications associated with Fine Bore Nasogastric Feeding Tubes:

If complications occur with the tube then they should be dealt with promptly and appropriately.

Nasogastric tubes may be associated with sinusitis, sore throats, difficulty swallowing, candidiasis, aspiration pneumonia, displacement, blockage and knotting.

Complication	Possible reason	Tips to avoid recurrence	Treatment
Failure to pass nasogastric tube	Poor patient compliance. Technique. Oesophageal stricture.	Good patient relations and informed choices given to encourage consent and compliance. Refer to another healthcare professional for advice.	Allow patient time to recover and discuss with them the benefits of naso gastric nutrition.
Malposition	Failure of tube to advance over larynx and down oesophagus into stomach.	Remove tube and change position of patient.	Ask a colleague for support. Ask Nutrition nurse specialist . Consider radiological guidance.
Nasal pressure sores	Tube too tight against nostril.	No tape on nostril. Change tape position daily if used on nostril	May require tube change to other nostril.
Intolerance/tube dislodgement	Confusional state. Poor procedure explanation or short term memory loss.	Good explanation and regular reinforcement of benefits. Adequate securing of tube	Multidisciplinary discussion before re-passing tube. Consider use of Nasal retaining device for nasogastric or NJ tubes. NNNG (2017)
Tube blockage Guidance for flushing tubes	Tube has not been flushed. Tube has been inadequately flushed. Medication formulation is inappropriate or incompatible.	Flush before and after every feed. Flush before, in between and after every medication Check medication with clinical pharmacist who may be able to suggest an alternative formulation/route.	If tube is blocked and unable to be flushed refer to techniques for unblocking. If attempts at unblocking tube fail, consider removing the tube and re-passing a new tube BUT consider method of insertion of current tube e.g. was it inserted radiologically/ endoscopically

Removing Fine Bore Nasogastric Tubes:

Prior to discontinuation of fine bore nasogastric feeding there should be discussion with the ward dietitian.

Procedure

1. Social hand wash
2. Put on apron and gloves
3. Explain procedure to patient and obtain consent to proceed.
4. Remove any nasal retaining device or tape.
5. The tube pinched or clamped to prevent flow of tube contents into the oesophagus on removal.
6. Withdraw the tube until completely removed
7. Inspect tube to ensure it is all intact
8. Offer tissues/clean patients nose
9. Dispose of tube and equipment according to NHSGGC policy.
10. Social hand wash
11. Document removal of tube.