Trust Standard Operating Procedure

University Hospitals Plymouth NHS Trust

Radiological confirmation of correct placement of nasogastric tubes in Adults, Children and Neonates for feeding

Issue Date	Review Date	Version
August 2021	August 2024	3

Purpose

Clarification of the process for radiological confirmation of placement for Adults and Children and Neonates

Who should read this document?

All clinical staff involved in the management of nasogastric tubes for adult, paediatric and neonatal patients

Key Messages

There is significant morbidity and risk of death associated with feeding through misplaced nasogastric tubes. In some patients (where there is minimal aspirate following placement of the NG tube) a chest film will be required to assess the location of the tube

In these cases, prior to feeding or administration of medication a Radiologist will be involved with evaluating the location of the tube. There are two exceptions to this for Neonatal Intensive Care Unit and Adult Intensive Care.

Core accountabilities	
Owner	Dr Lucy McGavin, Dr Jude Foster
Review	Clinical Effectiveness Group
Ratification	Assistant Medical Director for Quality – Paul McArdle
Dissemination	Dr Lucy McGavin, Dr Jude Foster
Compliance	SLCD for Medical Imaging, Lead Paediatric Consultant Radiologist

Links to other policies and procedures

This SOP should be read in conjunction with current University Hospitals Plymouth (UHP) Policies:

- Adult Nasogastric Tube Insertion Procedure and Management Policy
- X.2.2 Examination Protocol - Chest for confirmation of Nasogastric tube placement.

For adults in Critical Care, please also refer to (G01) Guidelines for Nutrition Support in Critical Care and ITU NG Documentation 2017.

Version History

1	March 2016	Document ratified by Clinical Effectiveness Group
2	March 2018	Document ratified by Clinical Effectiveness Group
3	August 2021	Document ratified by Clinical Effectiveness Group

The Trust is committed to creating a fully inclusive and accessible service. Making equality and diversity an integral part of the business will enable us to enhance the services we deliver and better meet the needs of patients and staff. We will treat people with dignity and respect, promote equality and diversity and eliminate all forms of discrimination, regardless of (but not limited to) age, disability, gender reassignment, race, religion or belief, sex, sexual orientation, marriage/civil partnership and pregnancy/maternity.

An electronic version of this document is available in the Document Library. Larger text, Braille and Audio versions can be made available upon request.

Standard Operating Procedures are designed to promote consistency in delivery, to the required quality standards, across the Trust. They should be regarded as a key element of the training provision for staff to help them to deliver their roles and responsibilities.

1 Introduction

This SOP is relevant to all involved in the care of adult, paediatric and neonatal patients requiring nasogastric tubes

2 Definitions

Nasogastric tube –A nasogastric tube is a plastic tubing device that allows delivery of nutritionally complete feed directly into the stomach; or removal of stomach contents. It is passed via the nose into the oropharynx and upper gastrointestinal tract.

Orogastric tube – An orogastric tube is a plastic tubing device that allows delivery of nutritionally complete feed directly into the stomach; or removal of stomach contents. It is passed via the mouth into the oropharynx and upper gastrointestinal tract

3 Regulatory Background

This SOP should be read in conjunction with UHP policies for the management of nasogastric tubes:

- Adult Nasogastric Tube Insertion Procedure and Management Policy
- X.2.2 Examination Protocol - Chest for confirmation of Nasogastric tube placement.

NHS/PSA/RE/2016/006

- Nasogastric tube misplacement: continuing risk of death and severe harm

4 Key Duties

Nasogastric tubes are placed on the wards at UHP for a variety of reasons, including patient feeding and administration of medication, as well as drainage.

There have been a number of patient safety incidents previously at UHP involving incorrect placement of nasogastric tubes. These are considered as NEVER events.

There is significant morbidity and risk of death associated with feeding through misplaced nasogastric tubes. In some patients (where there is minimal aspirate following placement of the nasogastric tube), a chest film will be required to assess thelocation of the tube. In these cases, prior to feeding or administration of medication, a Radiologist will be involved with evaluating the location of the tube.

There are two exceptions for Neonatal Intensive Care Unit and Adult Intensive Care.

5 Procedure to Follow

Pathway for Management of Nasogastric Tubes placed for feeding / medication

Following the Trust decision tree for nasogastric tube placement checks inadults and children (excluding neonates), many patients will not require imaging after placement of a nasogastric tube for feeding or medication administration.

Where there is clear evidence of gastric contents being aspirated by a nasogastric tube, with a proven pH of the fluid being below 5.5, there is no need to perform a chest X-ray. However, in those patients where the pH exceeds5.5, or there is minimal or no aspirate, imaging will be required.

In ward patients, if the aspirate is less than 2.5ml (adults)/1-2ml (paeds) a chestX-ray will be required.

Some patients may be taking a proton pump inhibitor (such as omeprazole),and in these cases ward staff should try to aspirate as long as possible after nasogastric tube insertion.

A chest X-ray (coded as ZXNGT on CRIS) will therefore be requested in patientswhere the pH exceeds 5.5 and aspirate is less than 2mls. In this situation, a chest X-ray will be requested on iCM and the request will be visible on CRIS to the radiographers. The Radiology Department will then undertake confirmation of position of thenasogastric tube.

A chest X-ray will be acquired by a Radiographer and the images will be placed in the Inpatient reporting silo, for the consultant to report 0900-1700.

Out of hours (i.e. after 1700 weekdays and at weekends), the Radiology Registrar or consultant on call should report the images – the referrer is required to contact the radiology registrar on call if the ng tube needs to be used and a report has not been completed.

Paediatric nasogastric tube chest X-rays performed out of hours:

Patients <18 years old (excluding neonates) who have nasogastric tube positioning X-rays can be reported out of hours if specifically requested. These will be coded as ZXNGT and placed in the IP reporting silo as per the adult population.

Only the positioning of the nasogastric tube will be reported. The paediatric radiologist will issue a full report of any other ancillary findingsin normal working hours.

The paediatric radiologist should be notified by the reporter, either within Insight, or by email/MS Teams that a paediatric film requires review.

A short code should be used by the reporter after reporting the nasogastric tube position: This interim report is specifically for the nasogastric tube position and not for any other paediatric findings. This film will be reviewed by a paediatric radiologist in normal working hours. It is the clinician's responsibility to view this final reportand act on these findings.
Neonatal nasogastric tube placement and imaging:

For neonates, imaging is not usually performed solely for NGT position but part of a multisystem assessment. The neonatal team take responsibility for the reporting of the X-rays out of hours i.e. confirming nasogastric tube positions.

The neonatal team are deemed competent in the assessment of the position of nasogastric tubes based on the regularity with which the position of nasogastric tubes (and other tubes) is assessed as part of routine neonatal work. Theroles include regular reviews of x-rays to confirm positions of ET tubes, central lines, nasogastric or orogastric tubes, replogle tubes and chest drains. There are also weekly radiology meeting in which the above are reviewed and competences of team members are updated.

As such someone is considered competent to report such X-rays if they are working at least in the capacity of a tier 2 practitioner. This includes (but not limited to)

a. Paediatric trainees, ST3 and above
b. Trainees less that ST3 level but with support and supervision of seniors
c. Advanced Neonatal Nurse Practitioners working on the tier 2 rota
d. Trust or speciality doctors working on the tier 2 rota
e. Neonatal consultants (substantive or locum)

In a situation where the position cannot be reliably confirmed by the above individuals, the nasogastric tube should not be used unless a discussion occurswith the allocated Paediatric Radiologist.

ICU nasogastric tube placement and imaging:

In the adult intensive care units (general, neuro, cardiac) imaging is not usually performed solely for determining the position of a nasogastric tube but part of a wider assessment of lines, tubes and other inserted artefacts.

The Intensive Care team regularly review X-rays and confirm positions of ET tubes, central venous catheters, PICC lines, nasogastric or orogastric tubes, pacing wires and chest drains. There are regular timetabled radiology meetings on ICU in which the above are alsoreviewed and competences of members of the team are updated.

All ICU trainees, ACCPs and trust grade staff must complete training in nasogastric tube Assessment (covered in the Basic ICM course (six monthly) and/or on-line self-assessment available through ESR) before being deemed competent.

The intensive care team will take responsibility for reporting out of hours portable x-rays and confirming nasogastric tube position. Individuals considered competent toReport such x-rays will therefore include:

a. Intensive care trainees, ST3 and above
b. Trainees less that ST3 level but with support and supervision of seniors
c. Advanced Critical Care Practitioners (ACCP)
d. Trust or speciality doctors working with support and supervision of seniors i.e. Intensive Care Consultants

In a situation where the position cannot be reliably confirmed by the above individuals, the nasogastric tube should not be used until a discussion occurs between theclinician

and duty radiologist to confirm its position

Ward Doctor / Ward Nurse Responsibilities

Where there is doubt about the precise placement of a nasogastric be, ward staff will first undertake troubleshooting actions (Reference UPHNT policies for themanagement of nasogastric tubes)

When troubleshooting measures have been undertaken and there is still doubt about the precise placement of the nasogastric tube, a chest x-rayrequest will be made by the Ward Doctor. The troubleshooting measures will be detailed within the body of the text on the request form, including details about why the nasogastric tube has beeninserted.
The ward team will place the “record of NGT insertion”paperwork in the notes and fully complete these paperwork as far as "2nd line test,” before an X-ray is requested. Once a report has been obtained from Radiology, the ward doctor will check the radiology report prior to authorising the administration of any fluids or feed.

The ward doctor will complete the bottom section of the ward sticker ‘record ofinsertion of nasogastric tube’. This acts as confirmation that the radiology report has been read by the ward doctor,and that it is safe to proceed with administration of feed or medication via the nasogastric tube.

Radiographer Responsibilities:

The radiographer will receive requests to obtain chest films to confirmnasogastric tube placement.

The radiographer will check the “record of NGT insertion”paperwork in the notes and fully completed as far as "2nd line test,” before an X-ray is performed. This form is also to be scanned on to CRIS system whenever possible.

The imaging area will include from above the apices of both lungs to well below the diaphragm and should indicate the position of the tip of the nasogastrictube. It is recognised that this is at variance with the NICE guidance which states that the X-Ray should demonstrate the position of the tip of the NG tube.

No feed or administration of medication should be performed via the nasogastrictube until the radiology report has been issued.

Paediatric nasogastric tube films in normal working hours are allocated to the specific paediatric reporting silo

6 Document Ratification Process

The design and process of review and revision of this procedural document will comply with The Development and Management of Formal Documents.

The review period for this document is set as default of **three years** from the date it was last ratified, or earlier if developments within or external to the Trust indicate the need for a significant revision to the procedures described.

This document will be reviewed by the **Clinical Effectiveness Committee** andratified by the **Assistant Medical Director for Quality.**

Non-significant amendments to this document may be made, under delegated authority from the **Medical Director**, by the nominated author. These must be ratified by the **Medical Director** and should be reported, retrospectively, to the**Clinical Effectiveness Committee**

Significant reviews and revisions to this document will include a consultation with named groups, or grades across the Trust. For non-significant amendments, informal consultation will be restricted to named groups, or grades who are directly affected by the proposed changes.

7 Dissemination and Implementation

Following approval and ratification, this procedural document will be published in the Trust's formal documents library and all staff will be notified through the Trust's normal notification process.

Document control arrangements will be in accordance with The Development and Management of Formal Documents.

The document author(s) will be responsible for agreeing the training requirements associated with the newly ratified document with the **Assistant Medical Director for Quality** and for working with the Trust's training function, if required, to arrange for the required training to be delivered.

8 Monitoring and Assurance

Monthly ward nasogastric tube audit of the record of insertion sticker- this is led by the Lead Nutrition Nurse specialist and reported at the Nutritional Steering Group

Neonates-weekly radiology meeting in which the above are reviewed and competences of members of the team are updated.

Intensive Care - All ICU trainees, ACCPs and trust grade staff must complete training in NG tube assessment (covered in the Basic ICM course (six monthly) and/or on-line self-assessment (available through ESR) before being deemed competent.

9 Reference

NHS/PSA/RE/2016/006: Nasogastric tube misplacement: continuing risk of death and severe harm

Radiology tutorials:
http://www.radiologymasterclass.co.uk/tutorials/chest/chest_tubes/chest_xray_ng_tube_anatomy