LocSSIP Title:	Insertion of a Nasogastric Tube
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NHS
North Cumbria University Hospitals
NHS Trust

PURPOSE - *Why do we need this LocSSIP?*

Incorrect placement of a nasogastric (NG) tube can cause catastrophic harm to patients. It is essential that the safety critical elements of inserting a nasogastric tube are followed by all staff who insert and confirm correct placements of nasogastric tubes prior to commencement of feeding.

POLICY - *What policies or national standards are related to this LocSSIP?*

- Trust Policy for Nasogastric tubes
- NPSA Alerts 2005, 2011, 2012 and 2013

PEOPLE - *What do you need to do? What are the training requirements?*

- All Staff at all levels caring for patients with nasogastric tubes must read and be aware of the contents of the Trust policy 'Nasogastric Tube Policy'.
- All Staff who are involved in insertion, confirmation of placement via X-Ray and ongoing care and feeding must complete the mandatory training packages as outlined below:

WHO	WHAT *(COURSE NAME)*	METHOD	FREQUENCY
All clinical staff who confirm NG tube placement by X-Ray.	000 Reducing the Risk of Feeding Through a Misplaced Feeding Tube	E-Learning	Three-Yearly
All clinical staff who insert NG tubes.	NG Tube Insertion Training	E-Learning or Face to Face	Three-Yearly
	NG Tube Insertion Competency Assessment	5 competency assessments on real patients or through simulation. At least one competency assessments must be on a person rather than simulated.	Three-Yearly
All staff involved in the ongoing care of and feeding through an NG tube.	NG Tube Ongoing Care & Feeding Training	Face to Face	Three-Yearly
	NG Tube Ongoing Care & Feeding Competency Assessment	5 competency assessments.	Three-Yearly

Notes:

- No foundation doctor (this includes both F1 and F2 doctors) is qualified to check the NG tube position radiologically.
- Competency Assessments are signed off by staff who have been approved as an NG Assessor by the clinical skills training team.
- Completed training records and completed competency assessments must be filed in the member of staff's personal development record with a copy sent to the Education & Training Department.
- If the skill has not been practiced for a period of 12 months the training and competence process must be repeated. This should be discussed at the annual appraisal.
- Face to Face Insertion Training will be available periodically during the year for staff to book on if they prefer this method to E-learning.

PATIENT – What should the patient expect?

- A detailed explanation should be given to the patient/carer about the procedure and what they should expect. Verbal consent and or implied consent should be sought when acting in patients best interests.
- The patient should, where possible give a pre agreed signal (e.g. raise a hand) to the operator carrying out the procedure to communicate that they wish the operator to stop.

1. SAFETY CRITICAL ELEMENTS OF THIS PROCEDURE

1.1 The consultant in charge of the patients care should assess the patient for suitability of NG feeding and placement of an NG Tube, this should include the benefits to be gained. This should be clearly documented in the patient's notes.
1.2 The procedure of inserting and confirming placement of a nasogastric tube is a two person procedure, with the exception of direct laryngoscopic insertion and tubes inserted for drainage only.
1.3 The first line test to confirm the tube is in the correct place is a pH measured between 1 and 4.
1.4 If no aspirate is obtained on the first attempt, points a,b,c and d should be followed as per appendix 3.
1.5 DO NOT carry out auscultation of air to test tube position (whoosh test).
1.6 If no aspiration is obtained, move to second line testing to confirm correct placement (X-Ray).
1.7 If a patient is at high risk of aspiration confirm pH (complete primary check) and proceed straight away to second line testing (X-Ray).

2. PRACTICE - INSERTION

2.1 Consider spraying both nostrils with Lignocaine or co-phenylcaine spray to anaesthetise the nose.
2.2 Help the patient to sit in a upright position in bed or chair supported by pillows. Note: head should not be tilted backwards. If unconscious, place in safe position by lying patient on their side.
2.3 Determine length of tube required by measuring from nose to ear lobe (figure 1) and then add this measurement to figure 2 – earlobe to xiphisternum (the NEX measurement):

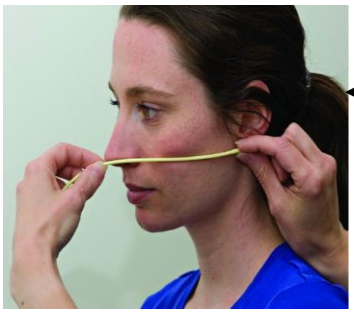

Figure 1

PLUS

Figure 2

2.4 Mark the tube at the NEX measurement.
2.5 Document the NEX measurement on the NG insertion document.
2.6 If patient has intact swallow reflex – ensure patient has a sip of water in preparation for tube placement. If patient is Nil by Mouth – they should be asked to repeatedly carry out swallowing action, but NOT take a drink. Note: if patient unconscious – tube placement will usually require airway protection and direct visualisation which must only be carried out by competent practitioners.
2.7 Follow manufacturer's instructions to activate the lubricant on the tip of tube, for example dipping the end in tap water or lubricating the proximal end of the tube with lubricating jelly.
2.8 Ask the patient to blow their nose with a tissue, then sniff with one nostril closed, repeat for the other side.
2.9 Chose the clearest nostril and insert rounded end of tube, slide it backwards and inwards along floor of nose to nasopharynx. Withdraw if any obstruction felt. Try again at slightly different angle or use other nostril.
2.10 As tube passes into oro-pharnyx, ask patient to start swallowing.
2.11 As tube insertion proceeds observe patient and remove tube if coughing, distress, cyanosis or failure to reach NEX measurement occurs, as this may indicate tracheal placement. Maximum of 3 attempts at insertion of NG tube before requesting specialist advice.
2.12 Check inside mouth for coil of tube.

2.13 Advance tube until predetermined limiting mark (NEX) has reached tip of nose (nasal vestibule) as a minimum and attempt to insert 5cm beyond (indicating the tube is further into the stomach).
2.14 Mark the tube at the value of the external tube marking at the tip of the nose.
2.15 Secure the tube to the nose, this may include nasal fixation device.
2.16 Document on the insertion record the value of the external tube marking at the tip of the nose.
2.17 Complete all parts of the NG insertion documentation relating to NG tube insertion.

Note: The tube must be positioned at or beyond the NEX measurement at insertion. If not do not use the tube and remove.

Depending on the reason for tube insertion follow either column A B or C;

A **NG Tube for feeding** ensure end of tube is firmly closed.	B **Ryles tube for emergency drugs**	C **Ryles tube only for stomach drainage**
Place NIL BY NG TUBE sign above the bed. (Appendix 4)	Commence procedure for confirmation of placement as in 3.1 below	Using a 50ml bladder syringe aspirate the stomach contents, measure and discard. If there is no aspirate remove the tube.
Commence procedure for confirmation of placement as in 3.1 below		Attach drainage bag and/or aspirate according to medical staff instruction.

3. PRACTICE – CONFIRMATION OF PLACEMENT

3.1 First Line Test Method *(NOTE: this is a two person procedure)*

- ✓ If appropriate (i.e. if a patient has previously been fed or taken medicines orally) wait 1 hour after feed or drug administration
- ✓ Aspirate 0.5 to1.0ml of stomach contents.
- ✓ Place the aspirated fluid on a CE marked pH indicator strip marked and manufactured for testing of human gastric aspirate.
- ✓ Place the aspirated fluid on the pH strip.
- ✓ Read the result within 10-60 seconds
- ✓ Place the pH strip on a sheet of clean white paper and compare with colour chart.

3.1.1 Patient considerations:

- ✓ If the patient is deemed high risk of aspiration, confirm pH (complete primary check) then move straight to second line testing method to confirm actual placement (3.2).
- ✓ If the patient has any of the following; Upper gastro intestinal surgery, repair of perforation, possibility of anastomotic failure, stomach removed or not in normal position do not rely on plain radiograph alone, consider CT scan.

3.1.2 Determining the result and next action following obtaining aspirate:

A **A pH is measured between 1 and 4:**	B **A pH is above 4 or unclear / unequivocal:**	C **No aspirate was obtained:**
Complete the remaining part of the Primary Check on the NG insertion document.	Complete the remaining part of the Primary Check on the NG insertion document.	Attempt the techniques a-d below: a) Turn patient on their left side and whilst in this position, undertake mouth care to stimulate gastric secretion and retry aspiration after 15 - 30 minutes b) Insert 10-20mls of air into the tube (to move the tube in the stomach). DO NOT carry out auscultation of air to test tube position (Whoosh test). c) Using a 20ml enteral syringe attempt to aspirate 0.5 to 1.0ml of stomach contents d) If the patient is able to swallow, and they are not nil by mouth, ask them to drink a small amount of liquid.
commence feeding as per dietician regime	Repeat the process for confirmation of placement as in 3.1 above.	If aspirate is obtained using any of these techniques return to the procedure for confirmation of placement as in 3.1 above
For ryles tube administer emergency drugs. Note ryles tubes must not be used for administration of emergency drugs longer than 24 hours after insertion.	**Result:** • **pH between 1 and 4** follow column A . • **no aspirate obtained** follow column C. • **result remains equivocal (pH above 4 or unclear)** proceed to second line test method below.	**No aspirate obtained.** Proceed to second line test method below.

3.2 Second Line Test Method

Note at any stage if a tube is found to be in the lung it will be removed immediately including in the x-ray department.

Contact a clinician with X-ray requesting rights and request they complete the following steps:

- ✓ Request an x-ray of the chest and upper abdomen clearly marking on the form that the purpose of the x-ray is to establish the positon of the nasogastric tube for feeding.
- ✓ Document the clinical history establishing if the patient is at high risk of aspiration.
- ✓ The radiographer will ensure that the exposure is appropriate for the intended purpose and that the nasogastric tube (NGT) can be clearly seen on the radiograph and used to confirm tube position
- ✓ The NGT position will be confirmed by a radiologist **or** a clinician involved and trained in the confirmation of NG tube placement by X-ray. (No foundation doctor this includes F1 and F2 doctors is qualified to check the nasogastric tube position radiologically)
- ✓ If there is doubt over the placement of the tube then a written report by a radiologist must be requested and no feeding or medication administration will take place until it is received.
- ✓ The NG insertion document will be completed by the clinician confirming placement of the NG tube ensuring that:

a) This is the correct patient and the most recent x-ray for **THIS** tube insertion (be aware that there may be other x-rays that relate to previous tube insertions)
b) The tube path follows the oesophagus/avoids the contours of the bronchi
c) The tube clearly bisects the carina
d) The tube crosses the diaphragm in the midline
e) The tip is clearly below the left hemi-diaphragm
f) They have completed the trust e-learning package on confirmation of NG tube placement

The clinician deciding the position of the tube will complete the 'secondary check' section on the NG insertion record and inform the nurse in charge of the result which will be either:

The tube has been removed and the procedure must start again.	Further confirmation tests are requested.	Await the radiologist report.	The guide wire can be removed and feeding can commence.

4. PRACTICE – ONGOING CARE

Repeat confirmation of NG tube position will be carried out at these times:-

- Before administering a bolus feed
- Before administering feed/ water following a rest period.
- Before giving medication.
- If the patient has been observed vomiting or retching, had coughing spams or complains of discomfort.
- If the patient reports that she/he has been vomiting, retching or coughing after being asked.
- If the patient becomes acutely distressed, breathless or has difficulty breathing.
- After physio or oropharyngeal suctioning.
- If there is any doubt about the position of the tube.
- At least once daily

Follow the flow chart for ongoing confirmation of nasogastric tube placement (appendix 3).

5. STOP THE LINE

STOP THE LINE ADVICE:

1. **Remove a nasogastric tube in which you are not certain the documented NEX has been achieved on insertion and discard the tube.**
2. **Do not feed down an NG tube unless the relevant NG insertion documentation is complete, in the notes and the primary and/or secondary tests have been passed.**
3. **The patient remains Nil by mouth and Nil by NG tube until placement of the NG tube is confirmed.**

6. RECORD KEEPING – WHAT SHOULD BE COMPLETED

- **Insertion Record (Appendix 1) should be completed following insertion of a Nasogastric Tube.**
- **Ongoing Care Record (Appendix 2) should be completed as part of the patients care plan where an NG Tube has been inserted.**
- **Nil by NG Tube (Appendix 4) sign should be placed above the bed until it is confirmed safe to use.**

7. AUDITS

Monitoring/audit arrangements	Methodology	Reporting		
		Presented by	Committee	Frequency
Monthly point prevalence audit via Auditr	Ward staff will complete the NG audit on the same day every month, the results will be presented monthly	Head of Nursing Clinical Standards	Safety & Quality	Monthly
Random spot check audits	Patients with an NG will be identified on RealTime. Spot check audit using Auditr tool will be completed.	Head of Nursing Clinical Standards	Safety & Quality	Quarterly
Bi-annual audit of time from X-ray request to time of X-ray	Report generated from X-ray data base	Head of Nursing Clinical Standards	Safety & Quality committee	Bi-annually

8. REFERENCES / EVIDENCE BASE

National Patient Safety Agency (2005) Reducing harm caused by the misplacement of nasogastric feeding tubes available at; http://www.nrls.npsa.nhs.uk/resources/?entryid45=59794%20

National Patient Safety Agency (2011) Patient Safety Alert NPSA/2011/PSA002:Reducing the harm caused by misplaced nasogastric feeding tubes in adults, children and infants http://www.nrls.npsa.nhs.uk/EasySiteWeb/getresource.axd?AssetID=129697

National Patient Safety Agency (2012) Harm from flushing of nasogastric tubes before confirmation of placement http://www.nrls.npsa.nhs.uk/resources/?EntryId45=133441

National Patient Safety Agency (2013) Placement devices for nasogastric tube insertion DO NOT replace initial position checks https://www.england.nhs.uk/wp-content/uploads/2013/12/psa-ng-tube.pdf

NHS improvement (2016) Nasogastric tube misplacement: continuing risk of death and severe harm available at; https://improvement.nhs.uk/uploads/documents/Patient_Safety_Alert_Stage_2_-_NG_tube_resource_set.pdf

The Royal Marsden NHS Foundation Trust (2015) The Royal Marsden Manual of Clinical Nursing Procedures. 9 ed. http://commercial.cumbria.nhs.uk/ClinicalNursingProcedures/

9. GOVERNANCE & DOCUMENT CONTROL

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Approved by:	NG Clinical Reference Group: 19/07/2017 Nasogastric Tube Steering Group Date: 26/07/2017
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Statement of changes from previous version

Version	Date	Brief summary of change (including section changed)
0.1	12/07/2017	Re-drafted SoP in accordance with updated NG policy.
0.2	17/07/2017	New insertion record drafted
0.3	21/07/2017	NEX measurement (clarification of wording on external measurement)
0.4	24/07/2017	Ward feedback on final changes and use in practice (minor amendments – appendix 4, time of insertion added and pH level).
0.5	01/08/2017	Changes made following review by Dr Simon Jones, Consultant Anaesthetist/Intensivist
0.6	03/08/2017	Changes made following review by Dr Simon Jones, Consultant Anaesthetist/Intensivist, Dr Rod Harpin, Medical Director, Elizabeth Klein, Head of Nursing, clinical standards.
0.7	03/08/2017	Changes made to the training section (page 1) by Ramona Duguid to make it easier to read and completion of secondary check wording (page 5).
0.8	09/08/2017	Emphasis on the **NOT** on appendix 3 & change initial to relevant (page 5) following review by Kathy Barnes, head of clinical standards.
0.9	10/08/2017	Audit methods added. The fixation tapes remain secure sentence removed from appendix 3 following agreement with Dr Simon Jones, Consultant Anaesthetist/Intensivist, Dr Rod Harpin, Medical Director, Elizabeth Klein, Head of Nursing, clinical standards, Kathy Barnes, Head of Clinical Standards.
0.10	11/8/2017	"If not aspirate remove the tube" added to column C page 5 following review by Ruth O'Dowd, Consultant Anaesthetist.
0.11	14/08/2017	"Carer" inserted on page 1 following comments from Claire Moore, Chief Matron, Paediatrics.
1.0	17/08/2017	Final version to be published with Trust Policy following TPG Approval.
1.1	01/09/2017	ADDITION OF THE WORDS "this may include nasal fixation device" on page 3 following request from clinical staff to Dr Rod Harpin, medical director. Amendment to box B on the initial insertion record following feedback from Julie Little Sister Elm A.
3.0	01/02/2018	V3 of the NG insertion record and V2 of the bedside chart were updated as per comments by the NG Task & Finish Group.

APPENDIX 1

Ward/clinical area: Consultant in charge of care:	**Nasogastric Tube Insertion Record**	Affix Patient Label Here

Patient Identity Correct?	Yes	No
Appropriate consent completed?	Yes	No
Type of Tube:		
Size of Tube:		

MEASUREMENT OF NEX			
What is the NEX measurement?		Value (CM):	
What is the measurement of the external marking at the nose?		Value (CM):	
Inserted By:			
Name:	Designation:	Date:_____ Time:_____	Sign:
Second checked by:			
Name:	Designation:	Date:_____ Time:	Sign:

Is the patient considered high risk of aspiration? YES/NO delete as appropriate
If yes, complete Primary Check then go straight to ***SECONDARY CHECK*** ***to confirm placement***

PRIMARY CHECK – CONFIRMATION OF PLACEMENT

A	Has aspirate been obtained?	Yes (If yes proceed to B)	No (Reposition patient and wait)	Aspirate obtained after reposition?	Yes If yes proceed to B	No Proceed to ***SECONDARY CHECK***

B	Is the pH between 1 and 4? Result:_____	Yes 1st Checker signature: _____ 2nd Checker signature:_____		**Proceed to feed if no risk of aspiration.**
	Is the pH greater than 4? Result	Yes: Repeat Primary check and if the pH is between 1 and 4 complete box above.	If the pH has remained equivocal (pH above 4 or unclear) Result_____ Go straight to ***SECONDARY CHECK***	

SECONDARY CHECK - CONFIRMATION OF PLACEMENT

Has the X-Ray been reported by a consultant radiologist?	Yes	No

I can confirm that the following criteria are met and it is safe to use the tube:

- ☐ 1. This is the correct patient and the most recent x-ray for THIS tube insertion (be aware that there may be other x-rays that relate to previous tube insertions)
- ☐ 2. The tube path follows the oesophagus/avoids the contours of the bronchi
- ☐ 3. The tube clearly bisects the carina
- ☐ 4. The Tube crosses the diaphragm in the midline
- ☐ 5. The tip is clearly below the left hemi-diaphragm
- ☐ 6. I have completed the e-learning package

Date X-Ray reviewed:_____
Time:_____
Name:_____
Signature:_____

If all criteria cannot be met, do not feed, call for senior review & help

Guidewire removed following confirmation of correct placement of NG tube	Date _____ Time _____ Name _____ Signature _____

Note: once the tube relating to this record is removed put a line through this record
01/08/2017 nasogastric tube insertion record version 3.

APPENDIX 2: BEDSIDE CHART
CONFIRMATION OF CORRECT PLACEMENT/POSITION OF NASOGASTRIC TUBE

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Ward/Unit: _____

Type/Size of feeding tube: _____

PATIENT ASSESSMENT CODE
A - Unconscious/Unresponsive
B - Semi Conscious
C - Swallowing Dysfunction
D - Enterally fed/Orally eaten <1 hour previously
E - Taking Antacids, Proton Pump Inhibitors or H_2 Antagonists
F - Retching/Vomiting/Coughing
G - Provided with suction either endotracheal or tracheostomy
H -Cognitively impaired
I - Transferred from another department or ward

Action taken to confirm position of tube before feeding code
a) Check initial insertion documentation has been fully completed and is correct.
b) Turn patient on their left side and whilst in this position, undertake mouth care to stimulate gastric secretion and retry aspiration after 15 - 30 minutes.
c) Insert 10-20mls of air into the tube (to move the tube in the stomach).
d) Using a 20ml enteral syringe attempt to aspirate 0.5 to 1.0ml of stomach contents
e) If the patient is able to swallow, and they are not nil by mouth, ask them to drink a small amount of liquid.
f) Check that the measurement of the external mark at the nose must be equal to or beyond the original NEX measurement (i.e. the tube has moved further into the stomach/gut). If measurement of the external mark at the nose is less than the NEX measurement (i.e. indicating the tube has moved upwards and out of the stomach/gut) do not use the tube.
g) Check that there is no visual sign of a coiled tube in oral cavity.
h) Feed commenced following trust policy
i) Medication given following trust policy
j) Tube flushed following trust policy

Date	Time	Patient Assessment Code	Value of external marking of tube at nose	Amount of Aspirate	pH	Confirmed by x-ray	Action taken to confirm position of tube before feeding code(s)	Name & signature nurse 1.	Name & signature nurse 2.

Follow the procedure for initial and ongoing confirmation of nasogastric tube placement at all times.
IF any new or unexplained respiratory symptoms are detected stop the feed and contact the medical team immediately.

Patient label

APPENDIX 3 - ONGOING CONFIRMATION OF NASOGASTRIC TUBE PLACEMENT

When possible ensure minimum of an hour without feed/medication to provide most reliable result.

Assess the tube and confirm all of the following:

a. the initial placement has been properly documented on the NG insertion chart.
b. the measurement of the external mark at the nose must be equal to or beyond the original NEX measurement (i.e. the tube has moved further into the stomach/gut). If measurement of the external mark at the nose is less than the original NEX measurement (i.e. indicating the tube has moved upwards and out of the stomach/gut) do not use the tube.
c. no visual sign of a coiled tube in oral cavity

If any of these are not confirmed
DO NOT FEED
Remove the tube put a line through the insertion record for this tube. Check that the tube is still required; if it is start the insertion procedure again.

Aspirate the tube using new 50ml enteral syringe and gentle suction

No aspirate obtained

Attempt the following;

a) Turn patient on their left side and whilst in this position, undertake mouth care to stimulate gastric secretion and retry aspiration after 15 - 30 minutes
b) Insert 10-20mls of air into the tube (to move the tube in the stomach).
c) Using a 20ml enteral syringe attempt to aspirate 0.5 to 1.0ml of stomach contents
d) If the patient is able to swallow, and they are not nil by mouth, ask them to drink a small amount of liquid.

Aspirate Obtained

Aspirate within safe range of pH 1-≤4

Aspirate obtained

Aspirate not obtained or pH is greater than 4

Yes

No

Proceed to use the tube and document on bedside chart

Confirm both of the following;

- The measurement of the external mark at the nose must be equal to or beyond the original NEX measurement (i.e. the tube has moved further into the stomach/gut). If measurement of the external mark at the nose is less than the original NEX measurement (i.e. indicating the tube has moved upwards and out of the stomach/gut) do not use the tube.
- there is no visual sign of a coiled tube in oral cavity

Both confirmed

Proceed to use the tube and document the action(s) taken to confirm position of tube before feeding on the bedside chart

One or both NOT confirmed

DO NOT FEED
Remove the tube put a line through the insertion record for this tube. Check that the tube is still required; if it is start the insertion procedure again.

APPENDIX 4

NIL BY NASOGASTRIC TUBE

THIS PATIENT IS AWAITING CONFIRMATION THAT THE TUBE IS SAFE TO USE

Date Tube Inserted:

Time Tube Inserted: