



Good Practice Guideline – Safe Insertion of Nasogastric (NG) Feeding Tubes in Adults and Ongoing care

Good Practice Guideline

Safe Insertion and Ongoing Care of Nasogastric (NG) Feeding Tubes in Adults

(This replaces the previous Good Practice Guidance Safe Insertion of Nasogastric (NG) Feeding Tubes in Adults - not ongoing care February 2012)

April 2016
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Introduction

A nasogastric tube (NGT) is inserted through the nose, into the stomach via the oesophagus for the purposes of:

- a) Enteral feeding
- b) Administration of medication
- c) Gastric aspiration and decompression (discussion of nasogastric tube care for this use is not covered within this Good Practice Guidance.)

Many nasogastric feeding tubes are inserted each day without incident. However, there is a small risk that a nasogastric tube can be misplaced during insertion or displaced after a successful insertion. Should misplacement occur and not be recognised serious harm could be experienced by the patient (NPSA 2011).

In line with National Patient Safety Agency guidance nasogastric tubes used for feeding should be radio-opaque along their entire length, be CE marked and have external visual length markings (NPSA 2011).

The size of nasogastric tube used for enteral feeding should be between 6 to 12fg.

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Types of nasogastric tubes

There are two common types of nasogastric feeding tubes:

1. **A short term nasogastric feeding tube** is usually made of PVC or low grade polyurethane and may be recommended for use up to 7-10 days. Refer to manufacturers' guidance for individual product lifespan. These tubes are generally used for aspiration of stomach contents. If a PVC tube is used for feeding it must be NPSA compliant (NPSA 2011).
2. **A long term nasogastric feeding tube** is usually made of polyurethane and will often have a guidewire throughout its length, stiffening the tube to aid the insertion process. Lifespan of this type of tube is usually 6 to 8 weeks but may vary according to individual manufacturers. Refer to manufacturers' guidance and NPSA guidance for product lifespan.

Nasogastric tubes are commonly inserted by a variety of practitioners including nurses, doctors and allied health professionals who for the purpose of this guideline, will be termed "practitioner".

Before undertaking this procedure the practitioner should have completed training and demonstrated competency in nasogastric tube insertion in accordance with local policy.

Although this procedure can safely be undertaken by one competent practitioner it is advisable to have a second person present to assist with positioning of the patient and to provide reassurance to the patient as and when required.

Insertion of a nasogastric tube is a clean procedure.

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| | Assessment | | |
|----|--|--|---|
| No | Action | Rationale | Reference |
| 1. | The patient must have an accessible gastro-intestinal tract. | To be able to insert the feeding tube safely. | NICE (2006) |
| 2. | The patient must have a functioning gastro-intestinal tract. | To allow absorption of feeds and/or medication. | NICE (2006) |
| 3. | <p>A multi-disciplinary team (MDT) approach to the initiation of nasogastric tube feeding should be utilised. The responsibility for the decision to place a nasogastric tube lies with the senior healthcare professional in charge of the patient’s care.</p> <p>Before undertaking the procedure:</p> <ul style="list-style-type: none"> • Ensure the rationale for the decision to insert a nasogastric feeding tube has been documented in the patient’s notes. • Review the patient’s medical notes to assess for previous surgery or contraindications to tube insertion or use. • Ensure all relevant investigations are undertaken (where appropriate) e.g. blood clotting tests. • Ensure the person undertaking the procedure is competent to do so. | To ensure feeding is appropriate and in the best interests of the patient. | <p>NPSA (2011)</p> <p>RCP (2010)</p> <p>NPSA (2011)</p> <p>NMC (2014)</p> <p>NMC (2015)</p> <p>GMC (2013)</p> |

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| Contraindications of bedside insertion of a nasogastric tube | | | |
|---|---|--|---|
| No | Action | Rationale | Reference |
| 4. | <p>Practitioners will have different levels of experience in placing nasogastric feeding tubes. Some contraindications, therefore, are relative and may be dictated by level of experience and/or speciality.</p> <p>Contraindications may include:</p> <ul style="list-style-type: none"> ○ Basal skull fractures ○ Maxillo facial disorders ○ 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 <p>This list is not exhaustive. You should refer to local guidelines/policy for clarity on contraindications relative to your area of practice and level of skill.</p> | To minimise complications and ensure patient safety. | <p>Hand et al (1984) Bowling (2004) Hutchinson et al (2008)</p> |

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| Explain the procedure to the patient | | | |
|---|---|--|--|
| No | Action | Rationale | Reference |
| 5. | <p>The purpose of the procedure and risks associated with it should be discussed with the patient and where the patient has capacity to consent, their agreement should be obtained. Following discussion the patient should be allowed time to consider their decision.</p> <p>Verbal consent is sufficient for this procedure. Discussion and patient decision should be documented in the relevant patient notes.</p> <p>Where patients demonstrate a lack of capacity a ‘best interests decision’ should be taken by the MDT responsible for their care.</p> <p>This may necessitate further discussion with the wider MDT and may require a best interests meeting involving the patient’s next of kin (NOK), an advocate or an independent mental capacity assessor (IMCA) as per local policy.</p> | <p>To demonstrate understanding and agreement with the procedure.</p> <p>To demonstrate compliance with current legislation and demonstrate wider consultation to ensure appropriate decision.</p> | <p>Stroud et al (2003) DH (2005) DH (2009a) DH (2010) RCP (2010)</p> |

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| Practitioner preparation for the procedure | | | |
|---|---|--|---|
| No | Action | Rationale | Reference |
| 6. | <p>Gather all equipment prior to approaching the patient to undertake the procedure including:</p> <ul style="list-style-type: none"> • Non sterile gloves and apron and other PPI if appropriate • A clean, clear working surface area • NPSA compliant nasogastric tube appropriate for intended purpose and in accordance with local policy • Appropriate enteral syringe (usually 60ml) • pH indicator strips (CE marked for human aspirate) • Receiver or vomit bowl • Tissues • Hypoallergenic tape and scissors or specific NG retention device or dressing • Water for flushing once gastric position has been confirmed. This could be freshly run tap water from a drinking source, cooled boiled water or sterile water (as per local policy) • Glass of water or squash with drinking straw (if patient has a safe swallow, is permitted to drink, and is not nil by mouth [NBM]) • Suction and oxygen (if required) | To ensure timely uninterrupted insertion of the NG tube. | NPSA (2005) DH (2009b) NPSA (2011) NICE (2006) |

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| Hygiene | | | |
|----------------|--|---|------------------|
| No | Action | Rationale | Reference |
| 7. | Wash hands before putting on gloves and apron – Follow the five moments for hand hygiene. Ensure universal precautions are used at all times. Prepare equipment on a clean surface area. | To adhere to local infection prevention and control policies. | WHO (2009) |

| Patient preparation for the procedure | | | |
|--|---|---|-------------------|
| No | Action | Rationale | Reference |
| 8. | Agree the patient role during the procedure including: <ul style="list-style-type: none"> • A signal to indicate a problem or their wish to stop the procedure (if able to do so) e.g. raising a hand. • Performing a swallow as they feel the tube passing through the pharynx (if able to do so). | To facilitate smooth passage of the tube and reassure and where possible involve patient. | BAPEN/NNNG (2012) |

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| Positioning the patient | | | |
|--------------------------------|---|--|-------------------------------------|
| No | Action | Rationale | Reference |
| 9. | <p>Position the patient appropriately, ideally sitting upright with the head supported by pillows.</p> <p>Where an upright position is not achievable either position the patient as upright as possible or lay them on their side with the head well supported by pillows.</p> | <p>To increase patient comfort whilst carrying out the procedure.</p> <p>To facilitate easier insertion of the tube and avoid inadvertent tracheal intubation.</p> | Dougherty, Lister, West-Oram (2015) |

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| Inspect and examine the nose for debris | | | |
|--|---|--|--|
| No | Action | Rationale | Reference |
| 10. | <p>Clear the nose by asking the patient to blow their nose, if able to do so. If this is not possible consider cleaning the area.</p> <p>Note there will always be one nostril slightly clearer than the other. Use the sniff test – i.e. using the index finger to occlude one nostril and then asking the patient to sniff and then do the same to the other side to identify which nostril is clearer at the time the procedure is due to be undertaken.</p> <p>Be aware that previous trauma including nasal fracture, polyps or sinusitis may mean only one nostril can be used.</p> <p>If no discernible difference you may wish to ask the patient if they have any preference for which nostril to use.</p> | <p>To ensure nasal passages are clear for smooth passage of the tube.</p> <p>To assess for any physiological malformation that may inhibit tube insertion.</p> | <p>Eccles (2000) Dougherty, Lister, West-Oram (2015) Stroud et al (2003)</p> |

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| Preparing your equipment | | | |
|---------------------------------|--|--|------------------|
| No | Action | Rationale | Reference |
| 11. | <p>Remove the nasogastric tube from its packaging.</p> <p>If a guidewire is present gently manipulate it to ensure it moves freely within the tube.</p> <p>Prior to inserting the nasogastric tube ensure the guidewire is locked firmly into place.</p> <p>Lubricate the outside of the nasogastric tube as per manufacturers' guidance.</p> <p>DO NOT lubricate the inner lumen of the tube with water before insertion and checking gastric positioning.</p> | <p>To facilitate easier removal of the guidewire following tube insertion</p> <p>To facilitate smooth passage of the tube and increase patient comfort.</p> <p>Activation of lubrication within the nasogastric tube has been shown to reduce pH readings and potentially give a false positive.</p> | NPSA (2012) |

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| Measuring tube length | | | |
|------------------------------|--|--|---|
| No | Action | Rationale | Reference |
| 12. | <p>Estimate the length of the nasogastric tube using the NEX measurement (nose, ear, xiphisternum).</p> <p>To do this:</p> <ul style="list-style-type: none"> Place the exit port of the tube at the tip of the nose, extend the tube across to the earlobe and then down to the xiphisternum. Note the predetermined mark. You may wish to mark the tube with a pen directly for a clear indication of the required measurement during the insertion procedure. <p>NB: This measurement is only an estimate. The position of the nasogastric tube may need to be adjusted to enable gastric aspirate to be collected (plus or minus 10%).</p> | To ascertain an approximate measurement to ensure the tip of the nasogastric tube reaches the stomach. | <p>Stroud et al (2003) NPSA (2011)</p> <p>Dougherty, Lister, West-Oram (2015)</p> |

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| Inserting the nasogastric tube | | | |
|---------------------------------------|--|--|---|
| No | Action | Rationale | Reference |
| 13. | <p>After lubricating the outside of the nasogastric tube gently insert the tube into the agreed nostril aiming toward the back of nose and along the nasopharynx.</p> <p>Ensure the head is not hyperextended.</p> <p>At this point:</p> <ul style="list-style-type: none"> • Where a patient is safe to swallow fluid and has capacity, offer a glass of water/squash with a straw and ask patient to swallow some water. • Where patient is not safe to swallow fluid but has capacity, ask them to perform a dry swallow. • In some instances, to assist insertion, a ‘chin tuck’ may be performed (tucking the chin down toward the chest). | <p>To reduce the risk of tracheal intubation.</p> <p>To aid intubation into the oesophagus and reduce risk of tracheal intubation.</p> | <p>Stroud et al (2003)</p> <p>BAPEN/NNNG (2012)</p> |

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| Advancing the nasogastric tube | | | |
|---------------------------------------|---|---|-------------------|
| No | Action | Rationale | Reference |
| 14. | <p>Slowly, advance the tube to the predetermined NEX measurement.</p> <p>If any significant resistance is felt during insertion halt the procedure, and pull the tube back but do not remove it completely.</p> <p>If the patient starts to cough during the procedure, stop, pull the tube back slightly and wait for coughing to settle.</p> <p>Before continuing, ask the patient to open their mouth to check the nasogastric tube has not coiled up at the back of the oral cavity.</p> <p>If the patient becomes distressed it is advisable to stop and seek senior specialist advice.</p> <p>Never force the nasogastric tube if resistance is felt.</p> <p>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.</p> | <p>To achieve gastric positioning of the tube.</p> <p>To avoid causing any harm.</p> <p>To avoid the need to replace into the nasal passage.</p> <p>To avoid causing any harm.</p> <p>To minimise patient distress.</p> | BAPEN/NNNG (2012) |

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| Obtaining aspirate | | | |
|---------------------------|--|--|---|
| No | Action | Rationale | Reference |
| 15. | <p>Once the nasogastric tube has been inserted to, or slightly beyond, the predetermined NEX mark:</p> <ul style="list-style-type: none"> • Leave the guidewire in position (if there is a guidewire). • Connect a 60ml enteral syringe onto the end of the nasogastric tube. • Flush the tube with 10mls air to remove any debris collected during the insertion procedure then exert gentle pressure to withdraw aspirate along the length of the nasogastric tube into the syringe. • Test the aspirate obtained, with pH indicator paper/strips that are CE marked for human gastric aspirate. • Ensure aspirate is measured and strips read as per manufacturers’ instructions. <p>The pH reading must be 5.5 or below before feed, fluid or medication can be administered via the nasogastric tube. (The pH ‘cut-off’ reading may differ according to local policy and pH indicator strips used but should never exceed 5.5).</p> <p>If an electromagnetic tracking device is used to monitor the progress of a nasogastric tube during placement, pH of aspirate or x-ray should always be used as a final means of confirming tube position.</p> | <p>To allow for the tube to be repositioned, if necessary.</p> <p>To confirm correct gastric position and that it is safe to feed.</p> | <p>NPSA (2007) NPSA (2011)</p> <p>Boeykens et al (2014) Gilbertson et al (2011) NPSA (2005) Jones et al (2014)</p> <p>Taylor et al (2014)</p> <p>NHS England (2013)</p> |

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| | | | |
|--|---|--|--|
| | <p>If unable to obtain aspirate refer to the NPSA decision tree or local policy for assistance.</p> <p>Note that if a guidewire is removed and the nasogastric tube requires repositioning, UNDER NO CIRCUMSTANCES SHOULD THE GUIDEWIRE BE RE-INSERTED INTO THE TUBE WHILST THE TUBE REMAINS IN THE PATIENT.</p> | | <p>NPSA (2011) BAPEN/NNNG (2012)</p> |
|--|---|--|--|

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| Securing the tube | | | |
|--------------------------|---|--|------------------------------------|
| No | Action | Rationale | Reference |
| 16. | <p>Secure the nasogastric tube at the nose or cheek once gastric position is confirmed.</p> <p>If a guidewire is present and has not been removed, remove it at this point, according to manufacturers' guidance.</p> <p>Flush the tube with water as per local policy.</p> | <p>To reduce displacement of the tube. Securing the nasogastric tube to the cheek rather than the nose reduces the risk of nasal erosion or ulceration.</p> <p>To clear tube of debris that may have collected when aspirate obtained.</p> | <p>NICE (2006) NPSA (2011)</p> |

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| Disposing of equipment | | | |
|-------------------------------|--|---|------------------|
| No | Action | Rationale | Reference |
| 17. | <p>Make the patient comfortable before disposing of equipment safely as per local policy</p> <p>Ensure the patient is in a position that is safe for the administration of feed, fluid or medication i.e. above a 30° angle.</p> | To maintain patient comfort and safety. | DH (2013) |

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| Documentation of the procedure | | | |
|--------------------------------|---|--|--|
| No | Action | Rationale | Reference |
| 18. | <p>Fully document procedure in the appropriate patient records (written or electronic).</p> <p>Documentation should include as a minimum:</p> <ul style="list-style-type: none"> • The date and time tube inserted. • The size and type of nasogastric tube used. • External cm markings at the nostril. • The method used to confirm gastric positioning of the tube. • Details of healthcare professional who inserted the tube including name and designation. • Include how consent was obtained/patient agreement indicated. Fully document best interests decisions. • Any problems experienced during the procedure. • Appropriate patient notes or bedside charts (as per local guidance). <p>Also consider documenting:</p> <ul style="list-style-type: none"> • Patient tolerability of the procedure. • The number of attempts undertaken to insert the nasogastric tube. • In which nostril the tube is situated. • The date a tube change is due. <p>Once completed commence feeding as per agreed documented care plan or per local starter regimen guidance.</p> | <p>To ensure patient safety and clear communication of care provided.</p> <p>To provide baseline information for any subsequent NG insertions.</p> <p>To raise awareness of any trauma experienced during the procedure and inform practitioners if there is a need in the future for specialist referral for NGT insertion.</p> | <p>DH (2009a) RCP (2010) NPSA (2011)</p> |

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Regular Care of Nasogastric Tube Post Insertion

| Obtaining an aspirate post insertion | | | |
|---|---|--|---|
| No | Action | Rationale | Reference |
| 19. | <p>pH testing for gastric placement should take place:</p> <ul style="list-style-type: none"> • Following initial insertion. • At least once daily when being used. • Before the administration of each bolus of feed or fluid. • Before medication, if feed not in progress. • Before commencing a new cycle of feed or fluid. • Following episodes of vomiting, retching or coughing. • When there is evidence of tube displacement e.g. length of tube at nostril is less than previously documented or securement device has loosened. • If there are any new or unexplained respiratory symptoms or reduction in oxygen saturation. <p>If feeding continuously, it is not always possible to check pH BUT:</p> <ul style="list-style-type: none"> • The length of tube at nostril or mark at nostril must be checked and documented at least daily. • If the patient displays respiratory distress or becomes distressed nothing should be administered via the tube. | <p>To minimise the risk of patient harm and adhere to the NPSA guidance for safe placement checks in adults.</p> | <p>NICE (2006) NPSA (2011) Dougherty, Lister & West-Oram (2015)</p> |

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| Flushing the nasogastric tube | | | |
|--------------------------------------|--|--|------------------------|
| No | Action | Rationale | Reference |
| 20. | The nasogastric tube must be flushed before and after administration of feed and medication with a minimum of 10mls water or as per local policy and patient’s fluid requirement/restrictions. | To minimise the build-up of feed and/or medication on the inside of the nasogastric tube. To prevent drug interactions. | White & Bradnam (2015) |

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| Pressure area care to the nostril and cheek | | | |
|--|---|---|--------------------------------------|
| No | Action | Rationale | Reference |
| 22. | <p>Check nasogastric tube or securement device is not causing pressure damage or excoriation externally or internally to the nostrils.</p> <p>Ensure checks are undertaken at least daily.</p> <p>Clearly document findings in the patient notes.</p> | To prevent pressure damage to the nostrils. | Dougherty, Lister & West-Oram (2015) |

| Patient positioning prior to using the nasogastric tube | | | |
|--|--|--|----------------------------|
| No | Action | Rationale | Reference |
| 23. | Before administering feed or medication ensure the patient is positioned upright or at a minimum of a 30° angle. | To help prevent reflux and aspiration. | Guenter & Silkroski (2001) |

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Troubleshooting

| Removing a blockage within a nasogastric tube | | | |
|--|---|--|-----------------------------------|
| No | Action | Rationale | Reference |
| 24. | <p>Ascertain when the nasogastric tube was last used and what it was used for i.e. feeding or medication. This will determine what actions are necessary to remove the blockage. A 60ml enteral syringe should be used and a pull/push action employed when attempting to unblock the nasogastric tube.</p> <ul style="list-style-type: none"> • If the blockage is caused by feed the following options should be considered using the above technique: <ul style="list-style-type: none"> ○ 15-30ml of warm water in a 60ml enteral syringe. ○ 15-30ml in carbonated water a 60ml enteral syringe. ○ Administration of enzyme based products (this should be discussed with pharmacist and prescribed if considered appropriate). • If the blockage is caused by medication the following options should be considered using the above technique: <ul style="list-style-type: none"> • Warm water 15-30ml in a 60ml syringe. <p>Under no circumstances should:</p> <ul style="list-style-type: none"> • A guidewire be inserted into the nasogastric tube in an attention to remove a blockage. • Carbonated drinks containing sugar or saccharin be flushed through the tube as they precipitate blockages. | <p>To establish the cause of the blockage within the nasogastric tube and to ensure the appropriate agent is used to remove / reduce it.</p> | <p>White & Bradnam (2015)</p> |

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| Unable to obtain an aspirate during daily checks | | | |
|---|--|--|--------------------------|
| No | Action | Rationale | Reference |
| 25. | <p>Check the position of the nasogastric tube at the nose.</p> <p>Try repositioning the patient.</p> <p>Insert 10-15mls of air through the nasogastric tube.</p> | <p>Nasogastric tube may become dislodged during movement.</p> <p>To remove debris that may be sitting within the tube or to adjust the tip of the tube within the stomach.</p> | <p>BAPEN/NNNG (2012)</p> |

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| Unable to obtain an aspirate below pH 5.5 during daily checks | | | |
|--|--|---|------------------|
| No | Action | Rationale | Reference |
| 26. | <p>Check the position of the nasogastric tube at the nose.</p> <p>Check the patient’s medication.</p> <p>Undertake pH check at least one hour following the stopping of feed.</p> <p>Where continuous feeds are necessary or PPIs are administered regularly making daily checks using pH difficult:</p> <ul style="list-style-type: none"> • Monitor external measurement markers at the nose and compare to previous recordings. • Check for patient discomfort. • Undertake risk assessment as per local policy. | <p>Nasogastric tube may become dislodged during movement.</p> <p>Acid inhibiting medications, e.g. PPI’s may increase pH.</p> | NPSA (2011) |

The NNG recognises that practice will vary according to individual risk assessments and local policy. However this good practice statement has been published in accordance with available evidence at the time of publication.



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