

THE MOUNT SINAI HOSPITAL, NEW YORK STANDARD: POLICY AND PROCEDURE	SUBJECT NO. GPP-248
DEPARTMENT: Medicine, Division of Gastroenterology SUBJECT: Adult Nasogastric Tube (NGT) Placement and Confirmation	

CROSS-REFERENCE:
 Nasogastric (NG) Tube Feeding For Adults, NU-209
 Chain of Command Policy, GPP-520
 Consent Policy, GPP-312
 Feeding Tube, Assisting in the Insertion of with Stylet, NSU-40
 Assisting in the Insertion of Feeding Tube With Stylet, NU-3.44
 Insertion (Assist) And Maintenance Of Nasogastric Tube, NU-212
 Nasogastric (NG) Tube Care Adults, NU-218
 Medications Given Via Enteral Route For Adult Patients, NU-151

Original Date of Hospital Issue: 6/2016

Reviewed:							
Revised:							

Policy

It is the policy of The Mount Sinai Hospital to ensure that nasogastric tubes (NGTs) for adult patients are placed in a safe and effective manner.

Purpose:

To develop a hospital-wide process to provide guidance, standardization and consistency for adult patients regarding: (1) understanding the risks and complications of NGT placement, (2) the proper method of placement, and (3) the proper steps to confirm placement.

Definitions, Indications and Complications of Nasogastric Tube (NGT) Placement:

Common indications for NGT placement include decompression of the GI tract and gastric emptying. NGTs may also be placed as an adjunct for the delivery of medications, enteral feeding solutions and oral agents such as activated charcoal or oral radiographic contrast medium. While this policy will focus on nasogastric tube placement, the same principles apply to oral gastric tube placement.

- Large Bore NGTs (ex. Levin, Salem Sump) are used for gastric decompression, feeding or medication administration. The typical diameter of these tubes for adults is between 12F-18F.
- Small Bore NGTs (also known as small bore enteral feeding tubes) are used for feeding and medication administration. The typical diameter of these tubes for adults is between 8F-12F. Small bore feeding tubes may have a stylet inserted through the tube to stiffen the tube for insertion.

The most common serious complication is misplacement of an NGT into the airway with resulting airway injury such as pneumothorax, perforation or bronchopleural fistula. In addition, if the tube is inadvertently inserted into the trachea or bronchi, intrapulmonary administration of feeds may occur, causing pneumonitis or pneumonia. This risk occurs for all types of tubes (small and large bore).

NG feeding tubes with stylets have been associated with higher rates of airway injury. Therefore, styleted small bore NGTs are restricted to pre-approved controlled environments with appropriately trained and supervised staff to prevent complications. The Department of Pediatrics, Surgical Intensive Care Unit and the Neurosurgical Intensive Care Unit at Mount Sinai Hospital are the only clinical areas where NG feeding tubes with stylets have been approved for use.

KEY Points:

- Only non-styleted NG tubes can be used for placement on nursing units.
- SICU, NSICU, ENT[^] and Pediatric units may stock and place styleted feeding tubes.
- Preparation for safe NGT placement is vital for a successful insertion. This includes proper assessment of the patient and communication with all team members prior to placement.
- Careful consideration should be given to evaluate for contraindications and high risk factors that predispose the patient to complications prior to NGT placement, including and most importantly misplacement of the NGT into the airways.
- NGT placement is never required emergently for enteral feeding or medication administration. Tube placement for feeding should optimally be performed during daytime hours when care can be escalated to more senior personnel if attempts are unsuccessful or complications arise. Only non-styleted tubes can be used for placement on the units. SICU, NSICU, ENT and Pediatrics units may stock and place styleted feeding tubes.
- Never force the NGT when resistance is met.
- STOP and remove the tube if significant nasal hemorrhage, excessive coughing, hypoxemia, or difficulty breathing occur. **When in doubt, take it out.**
- If the NGT cannot be placed correctly after 3 attempts by any of the frontline providers, then care should be escalated as per the MSH Chain of Command Policy (GPP-520).
- NGTs may NOT be utilized to administer medications, enteral feeding solutions, and/or any other oral agents until:
 1. X-ray confirmation of placement has been completed by a radiologist after provider (physician, physician assistant, advanced practice nurse) who placed the tube or designee, confirms time of NGT placement
 2. The provider verifies that a radiologist has confirmed proper placement of the tube
 3. An EMR order is entered by the provider indicating that a radiologist has cleared the tube for use.
- Confirmation X-ray includes both large and small bore nasogastric tubes.
- NGTs may only be used prior to X-ray confirmation for emergent gastric decompression.

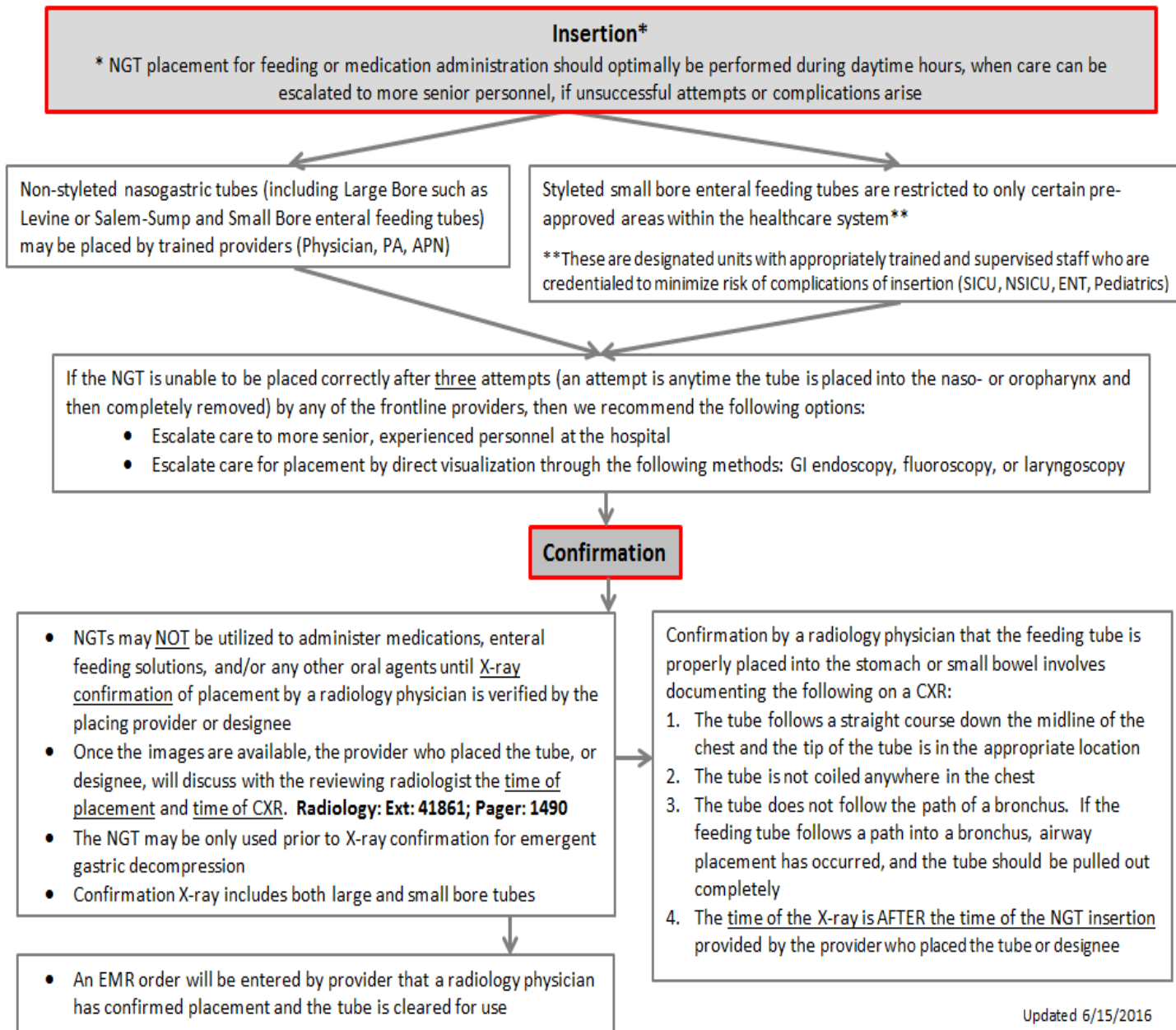
[^]SICU = Surgical Intensive Care Unit; NSICU = Neurosurgical ICU; ENT = Otolaryngology or Ear, Nose and Throat; Pediatrics includes all Pediatric Units including but not limited to the PICU (Pediatric ICU), NICU (Neonatal ICU), PCICU (Cardiac) and regular Pediatric Units in the Kravis Children's Hospital designated P and Floor #.

Resources:

1. <http://www.nejm.org/doi/full/10.1056/NEJMvcm050183>
2. Nasogastric Intubation: Todd W. Thomsen, M.D., Robert W. Shaffer, M.D., and Gary S. Setnik, M.D. N Engl. J Med 2006; 354:e16 April 27, 2006 DOI: 10.1056/NEJMvcm050183

Appendix A-F

A. Workflow for Insertion and Confirmation of Nasogastric Tubes:



B. Preparation:

1. All adult patients who require a NGT must first be assessed by the provider (MD, PA, APN) for potential contraindications and risks of the procedure prior to writing the order for placement. If any of the high risk factors are present, a plan of care should be discussed with the supervising provider. NGT placement is never required emergently for enteral feeding or medication administration. Tube placement for feeding should optimally be performed during daytime hours, when care can be escalated to more senior personnel if unsuccessful attempts or complications arise. Enteral feeding can always be held until the next morning without patient harm and medications can typically be converted to intravenous forms prior to NGT insertion.

2. High risk factors for tube placement complications include:

- a) Altered mental status or non-cooperative patients
- b) Receiving sedatives or pain medications
- c) Absent gag or cough reflex
- d) Critical illness – please note that an endotracheal tube or tracheostomy cuff are not protective against the NGT being placed incorrectly
- e) Difficult anatomy
- f) Coagulopathy or bleeding diathesis
- g) Multiple attempts in placement

3. Potential major complications of NGT placement:

- a) Misplacement of an NGT into the airway complicated by aspiration pneumonia, pneumothorax, perforations, empyema or bronchopleural fistula. NGTs are misplaced into the airway between 1.2 to 2% of tube placements, and 0.3 to 0.7% of all placements cause pulmonary injury.
- b) Esophageal injury
- c) Epistaxis

4. Absolute contraindications for tube placement include:

- a) Severe midface trauma
- b) Recent nasal surgery

5. Relative contraindications for tube placement include:

- a) Coagulation or bleeding abnormality
- b) Esophageal varices or stricture
- c) Recent banding or cautery of esophageal varices

6. Obtain the following equipment prior to placement:

- a. Nasogastric tube
- b. Viscous lidocaine 2% and 10mL syringe
- c. Water based lubricant
- d. Oral analgesic spray (Benzocaine spray or other)
- e. Glass of water with a straw
- f. Toomey syringe, 60 mL

- g. Tape
- h. Emesis basin
- i. Wall suction, set to low intermittent suction
- j. Suction tubing and container

7. Recommended size (diameter) of NGT:

- a) For gastric decompression, use large bore tube: 12-18F
- b) For feeding or medication administration, consider using the smallest size possible options include:
 - o Large bore tube: 12-16F
 - o Small bore tube without stylet: 10-12F
 - o Small bore tube with stylet: 8-10F (restricted to only certain pre-approved areas within the hospital (SICU, NSICU, ENT and Pediatrics))

Explain the procedure, benefits, risks, complications and alternatives to the patient or the patient's representative (surrogate, proxy or guardian).

C. Procedure for NG Tube Placement:

1. Choose the appropriate size (diameter) of the NGT.
2. Measure NGT length as follows:
 - a. Place feeding hole of NGT in front of nostril to be used for insertion
 - b. Extend NGT to tip of ear lobe and continue to the bottom of the sub-xiphoid process
 - c. Mark the NGT at this length
 - d. May repeat to ensure correct measurement.
3. Insert NGT as follows:
 - a. Examine the patient's nostril for septal deviation. To determine which nostril is more patent, ask the patient to occlude each nostril and breathe through the other.
 - b. Instill 10 mL of viscous lidocaine 2% down the more patent nostril, with the head tilted backwards, and ask the patient to sniff and swallow to anesthetize the nasal and oropharyngeal mucosa. Wait 5-10 minutes to ensure adequate anesthetic effect.
 - c. Lubricate the distal tip of the NGT.
 - d. Position the patient seated upright. Gently flex the head forward towards the chest.
 - e. Insert NGT into nostril and feel for opening in the back of the nasopharynx, where resistance will be met (typically 10-20 cm). At this time, in patients who are fully awake, ask the patient to sip on the water through the straw and start to swallow.
 - i. For oral insertion, direct tube to the back of the tongue and then direct tube downwards through the oropharynx. Instruct the patient to swallow to facilitate the placement of the tube into the stomach.

- f. Continue to advance the nasogastric tube until the distance of the previously estimated length is reached.
- g. Stop advancing and completely withdraw the nasogastric tube if, at any time, the patient experiences respiratory distress or hypoxemia, is unable to speak, has significant nasal hemorrhage or if the tube meets significant resistance.
- h. If using NGT with stylet,* then remove guidewire. If the guidewire cannot be removed, then pull out tube. Never replace the guidewire within the patient. *Guidewires or styletted tubes are restricted to only certain pre-approved designated units or areas within the hospital with appropriately trained and supervised staff that are certified on an annual basis to minimize the risk of complications of insertion. These areas are the SICU, the NSICU and the Departments of Otolaryngology (ENT) and Pediatrics.
- i. While placement of the nasogastric tube may be evaluated by auscultating a rush of air over the stomach using the 60 mL Toomey syringe or by aspirating gastric contents, verification prior to use is ALWAYS done through chest radiograph confirmation.
- j. Tape NGT securely to side of face.
- k. Observe patient for at least 10 minutes once feeding has started. Stop feeding and remove tube if the patient develops agitation, persistent cough, hoarseness, abnormal voice, gagging, hypoxemia, cyanosis, pain or signs of respiratory distress.
- l. Write a procedure note.
- m. Once the images are available, discuss with the reviewing radiologist the time of NGT placement to ensure the CXR being read followed the correct insertion.

Plain Radiography Reading Room (M – F 8:30 am – 8 pm) ext. 41861

After Hours Radiology Pager: 1490

Note:

- ***Patients may gag but should not cough. If there is any coughing during this process, it is a warning sign that NG tubing may be in the airway rather than the esophagus. In some cases, patients may not be able to communicate or exhibit a normal reaction to respiratory insults, such as patients with stroke or altered mental status with absent gag or cough reflex.***
- ***When in doubt, take it out.***
- ***Discuss time of procedure with reviewing radiologist.***

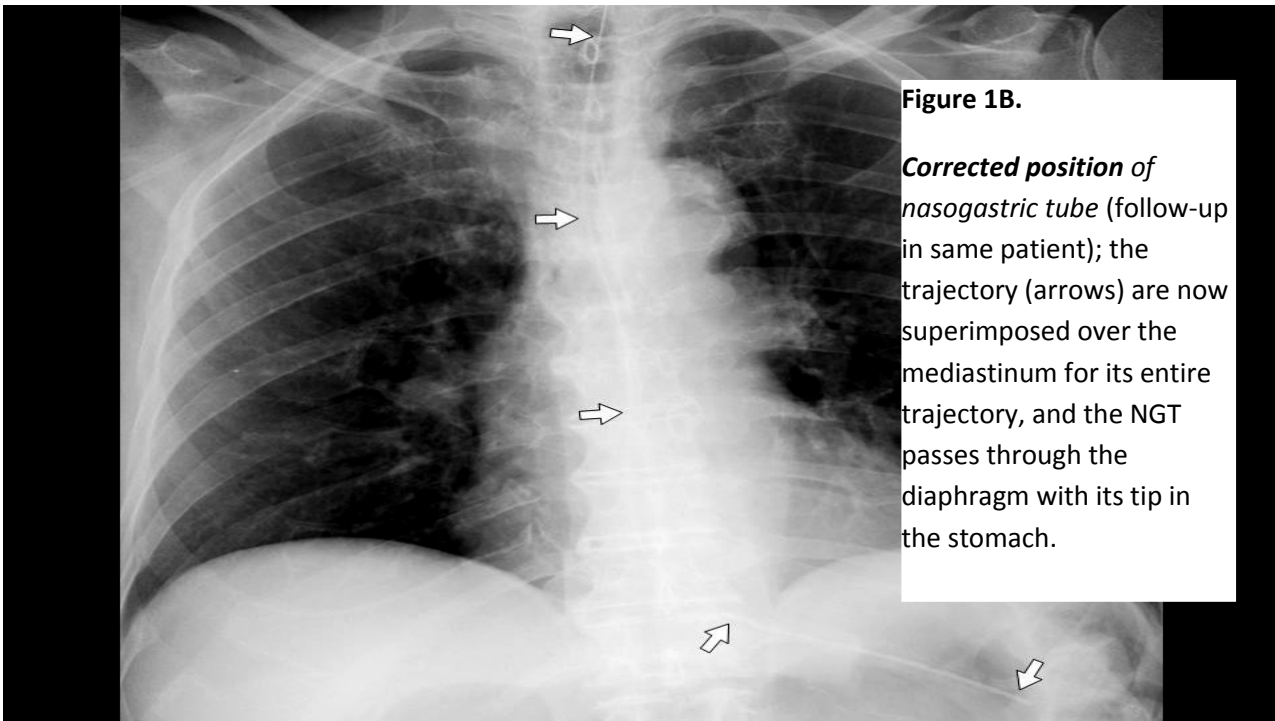
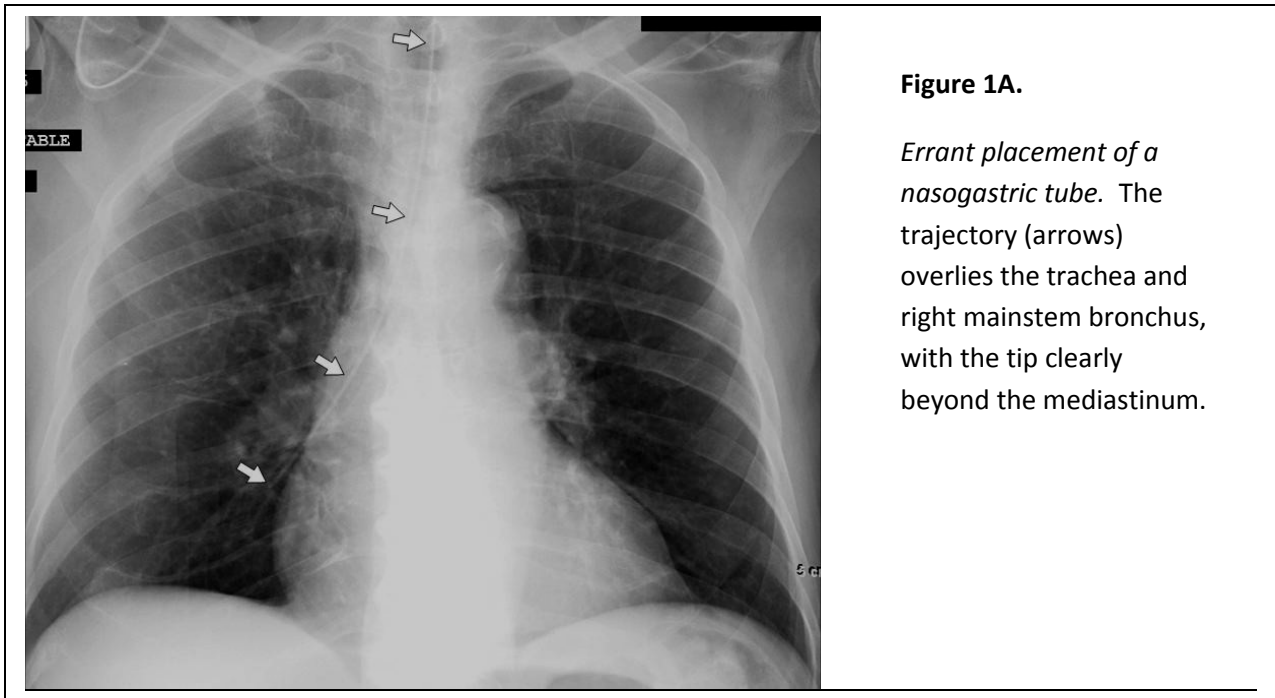
D. Confirmation of NGT Tube Placement:

1. **NGTs may NOT be utilized to administer medications, enteral feeding solutions, and/or any other oral agents until:**
 - a. The provider or designee has discussed with the reviewing radiologist the time of the NGT placement and time of the CXR to ensure reading of the correct films;
 - b. X-ray confirmation of placement has been completed by a radiologist;
 - c. The provider verifies that a radiology physician has confirmed proper placement of the tube;
AND
 - d. An EMR order is entered by the provider indicating that a radiologist has cleared the tube for use.
2. NGTs may only be used prior to X-ray confirmation for emergent gastric decompression.
3. Confirmation by a radiologist that the feeding tube is properly placed in the stomach or small bowel involves documenting the following on a CXR (see Appendix F attached):
 - a. The tube follows a straight course down the midline of the chest and the tip of the tube is in the stomach or small bowel of the patient, as appropriate (typically below the diaphragm).
 - b. The tube is not coiled anywhere in the chest.
 - c. The tube does not follow the path of a bronchus. If the feeding tube follows a path into a bronchus, airway placement has occurred, and the tube should be pulled out completely.
 - d. The time of the X-ray is AFTER the time of the NGT insertion (provided by the provider or designee)
 - i. Confirmation X-ray is required for both large and small bore tubes.

E. Guidance for limitations on number of insertion attempts and when to consider escalating care:

1. “Three strikes and you are out” policy for NGT placement:
2. If the NGT is unable to be placed correctly after three attempts (an attempt is any time the tube is placed into the naso- or oropharynx and then completely removed) by any of the frontline providers, then we recommend the following options:
 - a) Follow the Chain of Command Policy (GPP-520) and escalate care to more senior, experienced personnel at your institution.
 - b) Escalate care for placement by direct visualization through the following methods: GI endoscopy, fluoroscopy or laryngoscopy
 - c) Never force the NGT when resistance is met.
 - d) When NGT placement is unsuccessful, always consider asking for help from colleagues or from more senior personnel.
 - e) STOP and remove the tube if significant nasal hemorrhage, excessive coughing, cyanosis or difficulty breathing occurs.

F. Figures 1a and 1b: Chest radiographs demonstrating proper placement and improper placement of NGT:



Resources:

1. <http://www.nejm.org/doi/full/10.1056/NEJMvcm050183>
2. *Nasogastric Intubation: Todd W. Thomsen, M.D., Robert W. Shaffer, M.D., and Gary S. Setnik, M.D. N Engl. J Med 2006; 354:e16April 27, 2006DOI: 10.1056/NEJMvcm050183*