

 <p>Saskatchewan Health Authority</p>	<p>Policies & Procedures</p> <p>Title: NASOGASTRIC/OROGASTRIC TUBE: INSERTION, CARE OF, AND REMOVAL PEDIATRIC AND NEONATAL</p> <p>I.D. Number: 1177</p>
<p>Authorization:</p> <p><input checked="" type="checkbox"/> Former SKtnHR Nursing Practice Committee</p>	<p>Source: Nursing</p> <p>Date Effective: January 24, 2018</p> <p>Scope: Former SKtnHR Acute Care and Home Care Pediatric Respite</p>

Any PRINTED version of this document is only accurate up to the date of printing 28-Feb-18. The former Saskatoon Health Region (SKtnHR) cannot guarantee the currency or accuracy of any printed policy. Always refer to the Policies and Procedures site for the most current versions of documents in effect. The former SKtnHR accepts no responsibility for use of this material by any person or organization not associated with former SKtnHR. No part of this document may be reproduced in any form for publication without permission of former SKtnHR.

HIGH ALERT - Inadvertent placement in the trachea can lead to severe complications: pleural injury, pneumothorax, tracheobronchial aspiration, pneumonia, and death if fluids or other agents are infused (Walsh et al, 2016).

DEFINITIONS

Gastric Tube: is a single lumen tube placed via mouth or nose into the stomach. It encompasses any diameter/size, brand name or material and includes weighted gastric tubes inserted with or without stylets.

Nasogastric (NG) tube: a tube that is passed through the nose and down through the nasopharynx and esophagus into the stomach

Orogastric (OG) tube: tube that is passed through the mouth and down through the oropharynx and esophagus into the stomach

Salem-sump or Gastric Suction tube: is a two-lumen nasogastric orogastric tube. The dual lumen tube allows for safer continuous and intermittent gastric suctioning. The large lumen allows for easy suction of gastric contents, decompression, irrigation and medication delivery. The smaller vent lumen allows for atmospheric air to be drawn into the tube and equalizes the vacuum pressure in the stomach once the contents have been emptied. This prevents the suction eyelets from adhering to and damaging the stomach lining.

ROLES

Graduate Nurses (GNs): GNs may insert, care for and remove NG/OG tubes according to physician orders.

Graduate Licensed Practical Nurses (GLPNs): GLPNs may insert, care for and remove NG/OG tubes according to physician orders under supervision of an RN or LPN.

Registered Nurses (RNs): RNs may insert, care for and remove NG/OG tubes according to physician orders.

Licensed Practical Nurses (LPNs): LPNs may insert, care for and remove NG/OG tubes according to physician orders. **Prerequisite:** LPNs who graduated prior to 2008 must have completed the SaskPolytechnic NG Completer Course.

Most Responsible Physician (MRP) or designate: MRP or designate will provide orders for the insertion, use and removal of nasogastric/orogastric tubes, x-ray if needed, and will document results of any x-ray confirmation of tube placement.

1. PURPOSE

- 1.1 To minimize risk of aspiration and other complications associated with NG/OG tube insertion and use.
- 1.2 To provide consistent best practice guidelines for management of a NG/OG tube.

2. POLICY

2.1 Nasogastric/Orogastric tubes are used:

- 2.1.1 For short term medication administration and short term feeding
- 2.1.2 To remove fluid and gas from the gastrointestinal tract
- 2.1.3 To obtain a specimen of gastric contents
- 2.1.4 To treat gastric immobility and bowel obstructions
- 2.1.5 To allow for drainage and/or lavage in drug overdoses or poisonings

2.2 The MRP or designate writes order for :

- 2.2.1 Insertion and removal of gastric tube
- 2.2.2 Route of insertion

Note: Gastric tube should be placed orally in any intubated/ventilated patient and any patient with documented or suspected maxiofacial trauma or basal skull fracture as ordered by MRP or designate

- 2.2.3 Gastric suction tube: type and amount of suction

- 2.2.4 Gastric feeding order: including solution/feed type, additives, route, volume and rate and duration (if applicable) and feed increases permitted.
- 2.3 Gastric tube (NG or OG) size should be determined by weight, age and indication (decompression, feeds, gastric lavage). Choose appropriate size using guidelines per Appendix A.
- 2.4 The correct gastric placement of NG or OG tubes will be confirmed:
 - 2.4.1 Prior to application of ordered suction, prior to each instillation of medication, fluid, or feed at minimum once per shift by all of the following methods:
 - 2.4.1.1 Visual examination of posterior pharynx for absence of displaced/coiled gastric tube
 - 2.4.1.2 Visual examination of gastric contents – gastric secretions usually clear and colorless or pale yellow or green (See Appendix B)
 - 2.4.1.3 Testing pH of gastric aspirate. **A pH less than 5.5 is indicative of gastric placement.**
 - Note:** pH of gastric aspirate may be greater than 5.5 if patient receiving acid suppressants (ex: proton pump inhibitor or H2 blocker), or milk based enteral feeds. Flushing of gastric tube with sterile water may also alter pH.
 - Note:** Respiratory & small bowel secretions usually have pH greater than 6.
 - 2.4.1.4 Measure and document number marking or length of tube from nares/lip to where the NG/OG tube meets the connector. Absence of change of position as indicated by the markings on tube at point of entry alone is not confirmation of gastric tube's proximal position.
 - Note:** Auscultation of air insufflation through NG/OG is inadequate to definitively ensure gastric placement of NG/OG tubes
- 2.5 Continuous feeds – gastric feed will affect the pH measurement. The NG/OG tube will be checked using the following:
 - 2.5.1 Client is tolerating feeds
 - 2.5.2 Insertion length has not changed
 - 2.5.3 Absence of coughing or respiratory distress
 - 2.5.4 Absence of vomiting or retching
- 2.6 X-ray verification will be utilized if the methods listed in 2.4 are inconclusive to confirm tube placement. MRP or designate will order an x-ray. Requisition must indicate reason for X-ray (i.e. CXR for confirmation of gastric tube placement). The MRP or designate may confirm placement based

on the review of the x-ray. MRP or designate ordering the x-ray should consult with Radiology if there is any doubt as to proper gastric placement

Note: Gastric tube should not be used for administration of any enteral feed, medication or fluid until verification is performed.

2.7 Gastric tubes placed for decompression, suction or feeds/medications should be replaced:

2.7.1 Poly vinyl Chloride every 7 days

2.7.2 Polyurethane or silicone: every 30 days

2.7.3 Exception: NICU-change all gastric tube q 24 hrs. unless otherwise ordered.

Note: In some specific situations (ex: airway or esophageal surgery, maxio facial trauma) physician's order may indicate not to change gastric tube.

2.8 Special Considerations

2.8.1 Caution is warranted in placing gastric tube in patients with coagulopathies or anticoagulation therapy. It is recommended to check INR/PTT, hemoglobin & platelets prior to procedure.

2.8.2 If at any point during insertion of gastric tube the patient appears cyanotic, has abrupt decrease in oxygen saturation, or begins coughing severely, pull the NG/OG back until normal breathing resumes or remove completely

2.8.3 Severe coughing may indicate inadvertent pulmonary placement in a patient with intact airway protective reflexes

Note: Coughing may **not** be present with inadvertent pulmonary placement of NG/OG in a patient with depressed airway protective reflexes (i.e. depressed or absent gag, cough and swallow)

2.8.4 Consider use of 24% sucrose per physicians order (age dependent). See SHR Nursing Policy #1102 Sucrose for Procedural Infant & Pediatric Pain Management.

2.8.5 It may be necessary for second health care provider to assist with positioning and distraction of infant/child during procedure.

3. PROCEDURE

3.1 Insertion

3.1.1 Supplies:

- Gastric Tube size appropriate to age/weight and indication (See Appendix A)
- Sterile saline, or water-soluble lubricant
- Pectin-based skin barrier (optional)

- Tape, or tube fixation device to secure to nose/cheek
- Instrument or surgical tape (marking insertion length on tubes)
- Syringe (oral syringe or catheter tip syringe)
- pH testing strip
- Ice in kidney basin (optional)
- Soother and 24% sucrose per practitioner order/medical directive
- If Double lumen gastric suction type tube:
 - Anti-reflux valve (optional)
- If gastric suction ordered:
 - Suction canister and connection tubing
 - Suction regulator with continuous and intermittent suction options
 - Specimen trap (for infants)

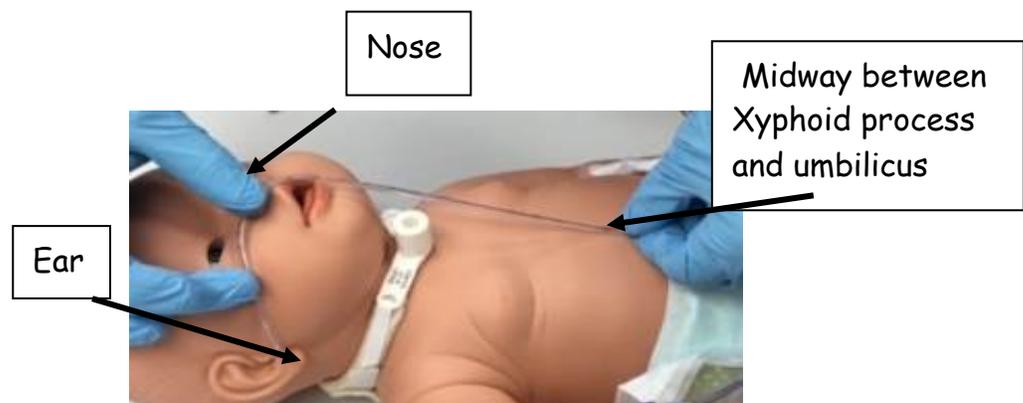
Note: If patient alert and permitted oral fluids: water to sip during procedure within fluid allotment

3.1.2 Perform hand hygiene and don appropriate PPE.

3.1.3 Explain procedure to patient/family as appropriate and obtain verbal consent from parent/guardians if possible.

3.1.4 Establish depth of insertion following measurement process below. Note cm markings on tube or mark tube with instrument tape by wrapping a small piece around at pre-measured length. .

Note: NG - by measuring from Nose to Ear to Midpoint between the xiphoid process and Umbilicus (NEMU). For OG measure from lip to ear to midpoint between xiphoid process and umbilicus



Nasogastric tube measurement

3.1.5 Moisten the end of gastric tube with the chosen lubricant. (Note- if using polyurethane tube, may place on ice for about 2 min prior to insertion to aide curving NG/OG to ease insertion).

- 3.1.7 Position infant/child using a developmental approach
 - 3.1.7.1 Infants/toddlers may need to be supported in a supine position either with swaddle type restraint or a second health care provider providing positioning support and distraction. A parent may also assist with positioning and distraction of child.
 - 3.1.7.2 Administer 24% sucrose as per medical order and /or implement other comfort techniques. Encourage infant to suck soother during insertion. If child/adolescent permitted fluids by mouth, encourage small sips of water via straw during procedure (within fluid allotment orders).
 - 3.1.7.3 Elevate HOB 30-45 degrees if not contraindicated.
- 3.1.8 If inserting via nasal route, determine nostril patency.
 - 3.1.8.1 Clean patient nares or have child blow nose.
 - 3.1.8.2 Alternate the nostril for placement with each change of a NG tube, if possible.
- 3.1.9 Insert NG/OG gently while following anatomical curve to posterior pharynx (down and back). Slight resistance may be felt when tube reaches the posterior pharyngeal wall. If not contraindicated, flex head slightly forward and have infant suck soother or older patient take small sips of water (if permitted) while continuing to advance NG/OG to premeasured depth.
- 3.1.10 If significant resistance is encountered at any point, remove gastric tube. Try an alternate route, i.e., opposite nares or mouth. Notify MRP or designate if cannot advance tube
 - Note:** If at any point the patient appears cyanotic, has abrupt decrease in oxygen saturation, or begins coughing severely during advancement of the NG/OG, pull the NG/OG back until normal breathing resumes or remove completely. Severe coughing may indicate inadvertent pulmonary placement in a patient with intact airway protective reflexes.
 - Note:** Coughing may not be present with inadvertent pulmonary placement of NG/OG in a patient with depressed airway protective reflexes (i.e. depressed or absent gag, cough and swallow), so verification per 2.3 should be used.
- 3.1.11 Continue to advance gastric tube until premeasured mark is at the nares if NG or premeasured marking is at the lip if OG.
- 3.1.12 Secure gastric tube with tape, transparent dressing, or tube fixation device, noting measurement marking at naris/lip or by measuring distance external to patient if no markings present (see Appendix C)
- 3.1.13 Verify position of NG/OG tube as per section 2.4

- 3.1.14 Confirm gastric tube secured at appropriate marking and/or measure length of gastric tube external to patient is same as recorded in Patient Care Plan.
- 3.1.15 Inspect posterior oropharynx for any coiling or displacement of gastric tube.
- 3.1.16 Aspirate for gastric contents by attaching a 3 to 5 mL oral syringe or catheter tipped syringe to largest lumen and draw back 0.5 to 2 mL of gastric contents.
- 3.1.17 Disconnect syringe and place gastric contents on pH testing strip per manufacturer's directions.
- 3.1.18 Read pH testing strip per manufacturer's directions.
- 3.1.19 If unable to obtain sufficient gastric aspirate for inspection and pH testing (See Appendix D).
 - 3.1.19.1 Re-position patient on left side to allow NG/OG to come in contact with pooled gastric secretions, and try again to aspirate
 - 3.1.19.2 Inject small quantity of air (1 to 5 mL) to dislodge secretions or blockage of the NG/OG and re-attempt to aspirate
 - 3.1.19.3 Consider advancing or retracting tube 1-2 cm and re-attempt to aspirate
 - 3.1.19.4 Consider removing and reinserting NG/OG tube and repeat steps to confirm placement.
 - 3.1.19.5 Notify MRP or delegate if still unable to obtain aspirate. X-ray may be considered if proper NG/OG placement can't be confirmed by above methods.
 - 3.1.19.6 If pH over 5.5, notify MRP or designate and consider interruption of enteral feed for 15 to 30 minutes or waiting for 15 to 30 minutes after feed to retest pH.
- 3.2 Continuous gastric feeds: monitor patient for clinical signs indicating NG/OG displacement such as cyanosis, abrupt decrease in oxygen saturation, or severe cough. Stop continuous feed, notify MRP or designate and assess gastric tube placement per 2.4 if these signs develop.
- 3.3 Anchoring tube
 - 3.3.1 Apply tape to nose and to tube (most common method) and anchor to cheek - methods vary depending on patient location (NICU, PICU, Acute Care Pediatrics – See Appendix C
 - 3.3.2 If there are no measurement markings on gastric tube, mark the tube using instrument tape to indicate level of insertion at nose/mouth. Measure and document length of tube from nares/lip to connector.
 - 3.3.3 Remove PPE and perform hand hygiene
- 3.4 Care of

- 3.4.1 Position patient with head of bed elevated to 30 degrees unless otherwise ordered
- 3.4.2 Verify NG/OG tube placement at least Q4H, and prior to instilling any medication, fluid or feeding as per 2.4
- 3.4.3 Perform hand hygiene and done appropriate PPE
- 3.4.4 Perform mouth care q1-2h to prevent damage to the oral mucosa while tube in place since mouth breathing is common in patients who have a nasal tube present.
- 3.4.5 Monitor insertion site (nose or mouth) for skin irritation q shift and prn.
- 3.4.6 Gastric suction:
 - 3.4.6.1 Measure and document gastric volumes q1-4 hrs per unit specific standards or MRP/designate orders. Note color and consistency of gastric drainage and notify MRP/designate if blood/coffee ground like drainage/or for volumes greater than 1mL/kg/hr.
 - 3.4.6.2 Clamp gastric tube and discontinue suction for 1 hour following enteral medications unless otherwise ordered.
 - 3.4.6.3 Auscultate for bowel sounds q shift or as ordered. (turn off suction while auscultating).
- 3.4.7 Remove PPE and perform hand hygiene
- 3.4.8 Report to the physician
 - 3.4.8.1 A sudden increase or decrease in output of gastric drainage
 - 3.4.8.2 The presence of “coffee ground” or frank blood in gastric drainage
 - 3.4.8.3 An abnormal pH
 - 3.4.8.4 Large volume losses as can lead to electrolyte imbalances and hypovolemia, both of which may require IV fluid replacement
 - 3.4.8.5 Unable to verify placement with pH.
- 3.5 Removal of gastric tube
 - 3.5.1 Check MRP or practitioner order
 - 3.5.2 Explain procedure to patient/family as appropriate
 - 3.5.3 Perform hand hygiene and don PPE as appropriate
 - 3.5.4 Turn off suction if in use and disconnect NG/OG from drainage system.

- 3.5.5 Gently flush NG/OG with 1-5 mL sterile water or air to remove any acidic gastric secretions within tube.
- 3.5.6 Remove NG/OG fixation device or tape.
- 3.5.7 Remove NG/OG on peak of inspiration or expiration if possible, or have patient take a breath and hold it, if appropriate. Gently remove NG/OG in one smooth, rapid movement.
- 3.5.8 Clean nose/mouth as appropriate. Ensure oxygen prong/mask properly repositioned if in use. Check patient comfort, respirations and SpO₂.
- 3.5.9 Inspect intactness of tube, and then discard.
- 3.5.10 Measure and record amount of drainage per unit specific standard.

Note: If patient has inadvertently removed NG/OG, check with Charge Nurse or MRP or designate regarding reinsertion need.

- 3.5.11 Remove PPE and perform hand hygiene

3.6 Documentation (Chart on appropriate nursing record)

- 3.6.1 Date & time of NG/OG insertion, size of NG/OG , location (oral, left nares, right nares) and depth (cm. measurement) that NG/OG tube should be inserted (note: if no cm. markings on tube, measure and document length of tube external to patient).
- 3.6.2 Tolerance of procedure. Indicate the placement verification done to ensure proper placement prior to use of NG/OG including pH testing results

REFERENCES

- Bowden V.R. & Greenburg, C.S , 2012. Ch 36 Enteral feeding tubes. *Pediatric Nursing Procedures, 3rd ed.* Lippincott Williams & Wilkins
- Gardner, S. L., Carter, B. S., Enzman-Hines, M., Hernandez, J. (2011). *Merenstein & Gardner's Handbook of Neonatal Care (7th edition)*. St. Louis: Mosby Elsevier.
- Health Sciences Centre Winnipeg, (2015). *Interprofessional Education Neonatology: Oral Feeding of Preterm and High Risk Neonates*
- Irving, S., Lyman, B., Northington, L., Bartlett, J., Kemper, C., & NOVEL Project Work Group. (2014). Nasogastric Tube Placement and Verification in Children: a review of current literature. *Critical Care Nurse* 34 (3).
- MacDonald, M. G. & Ramasethu, J. (2007). *Atlas of Procedures in Neonatology*. Philadelphia: Lippincott Williams & Wilkins.
- Martin, S. A. & Kerr, C. L 2013. *Gastrointestinal and Nutritional Disorders in Mary Fran Hazinski, Editor. Nursing Care of the Critically Ill Child (3rd ed.)* pp. 773-823. St. Louis, MI. Elsevier
- Smith N; Pravikoff D; (2016). Gastric Secretion pH testing. *Nursing Reference Center Plus. CINAHL Nursing Guide,E.*
- Wallace, T., Steward, D. 2014. Gastric Tube Use and Care in the NICU. *Newborn and Infant Nursing Reviews, 14(3)*, 103-108. http://www.medscape.com/viewarticle/831962_1
- Walsh, K. & Caple, C. 2016. Nasogastric feeding tube: inserting and verifying placement in the pediatric patient. *Nursing Reference Center Plus. CINHAL Information Systems.*
- Walsh, K. Woden, M. Pravikoff, D. (2016). *Nasogastric Tube Removal-Infants and Children. Nursing Reference Center Plus.*

Appendix A

Selection of Gastric Tube Size in Infant/Pediatric Patients

- Less than 1000 gms - #5 FR
- 1000 – 1600 gms - #5 or 6.5 FR
- 1600 – 2200 gms - #6.5 FR
- Greater than 2200 gms - #6.5 – 8 FR
- Infant (over 2 month of age) & young child - #6-8 Fr
- Older child to Adolescent - #8-14 Fr
- Or formula calculation: [(age in years) + 16] divided by 2 = size in French

Appendix B

Visual Interpretation of Gastric Aspirate

Aspirate Location	Aspirate Characteristics	pH
Gastric	Clear, off white, grassy green, tan, brown-tinged if blood present	Less than or equal to 5
Intestinal	Bile stained, light to dark golden-yellow	Greater than 6
Pulmonary (tracheobronchial)	Watery, straw yellow mucous	Greater than 6

From Bowden & Greenburg, 2012. Ch. 36 Enteral feeding tubes. *Pediatric Nursing Procedures, 3rd ed.* Lippincott Williams & Wilkins

Appendix C

Securement of Gastric Tubes

Nasogastric Tube



Orogastric tubes



Flow Chart for Orogastric and Nasogastric Tube Feeding Decisions

