SECTION: **PATIENT CARE** **SUB SECTION: NUTRITION**

SUBJECT: **GASTROINTESTINAL (GI) TUBE INSERTION AND MAINTENANCE, ENTERAL NUTRITION, AND GASTRIC DECOMPRESSION IN ADULTS**

APPROVED BY: _____
Chief Executive Officer

POLICY

I. Arrowhead Regional Medical Center's (ARMC) multidisciplinary patient care team ensures the safe insertion of gastrointestinal (GI) tubes for uses including but not limited to:

A. Administration of enteral nutrition and medications
B. Instillation of fluid for hydration or irrigation
C. Gastric decompression

II. Types of Enteral Feeding Tubes

A. Pre-pyloric tubes end in the stomach above the pyloric sphincter. They are used for both continuous or bolus feeding regimens.

Types of Pre-Pyloric feeding tubes include but is not limited to:

1. Nasogastric (NG)/Oro-gastric (OG) tube (i.e., Levin tube, Salem sump tube). Used for short term (4-6 weeks) enteral feeding.
2. Gastrostomy tube that are inserted surgically
3. Percutaneous endoscopic gastrostomy tube

B. Post-pyloric tubes are placed past the pyloric sphincter in the jejunum. They are indicated for patients with gastric emptying concerns which includes but not limited to the following:

1. Gastroparesis
2. Acute pancreatitis
3. Gastric outlet stenosis
4. Hyperemesis
5. Recurrent aspiration

Types of Post-pyloric tubes include but is not limited to:

1. Weighted Dobhoff tube
2. Surgically placed Gastric-Jejunal tube (GJ tube)
3. Percutaneous Endoscopic Jejunal (PEJ) tube

III. Tubes for Gastric Decompression

The Levin and Salem sump tubes are placed in the stomach and are used for gastric decompression.

IV. General Safety Considerations

A. See Department of Nursing (DON) Policy 506.00, Tubing Misconnection Prevention

1. Non-licensed staff, patients, and visitors receive education from the nurse not to reconnect the line if it becomes disconnected.
2. When connecting feeding bags or making a reconnection, the nurse traces lines back to their origin to avoid misconnections.

B. Tube Insertion:

1. NG tube placement is contraindicated in patients when basilar skull fracture or cranio-facial trauma exists.
2. Feeding tubes that come with a guidewire/stylet provides stiffness to the tube, this facilitates proper placement during insertion. Guidewires/stylets add to the risk of pulmonary or esophageal injury during insertion.
3. Guidewires/Stylets are never re-inserted while the feeding tube is in the GI tract as this can cause gastric perforation.
4. Patients with severe coagulopathies have an increased risk of bleeding during NG tube insertion. Labs are drawn as ordered by the provider, which includes but not limited to:
   a. Prothrombin time (PT) International normalized ratio (INR)/ Partial Thromboplastin Time (PTT)
   b. Hemoglobin and Hematocrit
   c. Platelet count

5. See Clinical Nursing Skills & Techniques: Enteral Nutrition for the procedure for inserting large-bore GI tube (i.e. Levin, Salem Sump) and small-bore feeding tube (i.e. Dobhoff).

C. Radiographic Confirmation of GI Tube After Initial Placement

1. Radiographic confirmation of NG/OG tube placement via a Kidney, Ureter, Bladder (KUB) x-ray is required after initial placement before use.
2. The air bolus/auscultation method of tube placement verification has not been to shown to be reliable. Do not use this method for verifying tube placement.
3. In emergent situations where immediate gastric decompression is required, the air bolus method of NG placement confirmation is allowed. A KUB x-ray is obtained as soon as the situation allows.
4. Do not use the water bubble method (holding the proximal end of a feeding tube under water and observing for bubbles upon exhalation) to determine tube location.

D. See Clinical Nursing Skills & Techniques: Enteral Nutrition for the procedure for techniques to anchor feeding tubes and bedside monitoring of tube position.

V. Roles and Responsibilities

A. Provider enters order including but are not limited to:

1. Order for GI tube placement

2. Type and route of the GI tube
3. KUB x-ray to confirm placement prior to using the tube
4. Authorization for the licensed nursing staff to begin using a GI tube after radiographic confirmation of the tube's placement
5. Volume/rate of enteral feeding solution administration
6. Type of feeding formula and/or additives
7. Irrigation solution and frequency, if applicable
8. Mode and amount of suction (e.g. intermittent low wall suction)
9. Discontinuing the GI tube
10. Nutritional services consult as indicated

B. Licensed Nurse staff are authorized to perform the following duties:

1. Place feeding tubes with a Provider's order
2. Perform bedside monitoring of tube position
3. Anchor/Secure GI tube with a securement device
4. Receive an order from the Provider that the placement of any GI tube has been verified radiographically prior to administration of enteral nutrition, fluid, medications, or contrast
5. Initiate enteral nutrition per the Provider's order
6. On-going assessment, monitoring, and any Provider notification

VI. Ongoing Assessment

A. Anchoring/Securement Device:

1. After verification of placement, use a tube anchoring/securement device.
2. Monitor for pressure breakdown under the securement device. Remove, reposition and replace as indicated.
3. Monitor the nares for signs of skin irritation or device related skin breakdown with special attention to the alar and the septal cartilage.

B. Ongoing GI Tube Placement Verification: Bedside Assessment/Monitoring

1. Perform bedside verification, monitoring of placement/position and patency of the tube:

   a. Upon initial insertion
   b. Each shift, as part of physical assessment
   c. Prior to instillation of fluid for the purpose of irrigation
   d. Prior to the administration of nutrition and/or medications
   e. After episodes of vomiting, gagging, retching, or severe coughing
   f. Change in the patient's condition, such as abdominal pain, cramping, bloating, fullness, or burning with feedings.
   g. Unusual leakage around the tube
   h. If patient suddenly becomes short of breath

2. Observe the appearance of the gastric aspirate, see Mosby Skills: Feeding Tube Verification of Placement.

   a. Most gastric aspirates are clear or grass-colored
   b. Most intestinal aspirates are stained a distinct yellow by contact with bile

c. Gastric aspirates from intermittently tube-fed patients are not typically bile stained, unless intestinal fluid has refluxed into the stomach
d. In many cases, aspirates from continuously tube-fed patients have the appearance of curdled enteral formula

3. If after repeated attempts, fluid cannot be aspirated via a tube that was radiographically confirmed as in the desired position, assume that the tube remains correctly placed if these assessment findings are true:

a. There are no documented previous tube dislodgment.
b. The tube has remained in the original taped position.
c. The patient is not experiencing respiratory distress

C. Provide nose and oral care per unit protocol
D. Provider notification includes but is not limited to:

1. Aspiration
2. Tube misplacement or dislodgment
3. Refeeding syndrome
4. Medication-related complications
5. Fluid imbalance
6. Insertion-site skin breakdown and/or infection

VII. Documentation

A. Record gastric residual volumes (GRV) in patient's medical record at least every 4 hours or per Provider order.
B. Record formula type
C. Record intake and output.
D. Record the size and type of tube placed, location of distal tip of the tube, patient's tolerance of procedure/feeding and confirmation of tube position.
E. Nasal/mucosa, skin site integrity every shift
F. Education provided to patient/family/significant other/designated caregiver

PROCEDURE

I. See Clinical Nursing Skills & Techniques: Enteral Nutrition for the procedure for continuous and intermittent administration of enteral nutrition.

II. Maintenance of Continuous Tube Feedings

A. Fill feeding bag with no more volume than is expected to be infused within 4 hours. Enteral formula or sterile water hanging at room temperature for more than 4 hours is subjected to possible microbial growth.
B. Feeding bag, tubing, and large catheter tipped syringe are labeled with date/time and changed every 24 hours or per manufacturer guidelines.
C. For patients with continuous enteral feedings, keep the head of the bed (HOB) at 30 degrees (^{o}) to 45^{o} at all times unless contraindicated.
D. Use sterile water to flush GI tubes and to prepare medication for patients, or as ordered by Provider.

E. GRV Monitoring:

1. For patient receiving enteric nutrition via GI tube placed pre-pyloric:

    a. Monitor GRV every 4 hours or as ordered
    b. Hold TF and notify the Provider for any of the following:

        1) GRV greater than 500 ml, unless lower threshold is ordered
        2) The patient has physical signs of intolerance (abdominal distention, bloating, nausea and vomiting) are present

2. If GRV consistently above 500 ml because of gastroparesis, consider small bowel access and feedings.
3. GRV checks are not required for feeding tubes placed post pyloric.

III. Gastric Decompression

A. Continuous/intermittent low suction (30 to 40 mm Hg) or high suction (120 mm Hg) is applied to the gastric sump tube as ordered by the provider. The sump tube has an air vent lumen that prevents excessive negative pressure from developing against the gastric mucosa.
B. Use the least amount of suction pressure to achieve successful drainage.
C. See Clinical Nursing Skills & Techniques: Insertion, Maintenance, and Removal of a Nasogastric Tube for Gastric Decompression.

IV. Administration of Medication Through A GI Tube

A. See Clinical Nursing Skills & Techniques: Enteral Nutrition.
B. Medication in tablet form poses a clogging hazard if not crushed appropriately. Check with the pharmacist to see if a liquid form of the medication is available and can be substituted. Obtain a Provider order to make the change.
C. Never crush enteric-coated, potassium, or time-release tablets/capsules.
D. When crushing pills, use a pill crusher to grind tablet to a fine powder and mix with sterile water prior administration.
E. Medication Administration, Special Considerations:

1. Suspensions: Shake the suspension prior to administration via the GI tube to ensure the appropriate dose of medication is delivered
2. Drug/Enteral Nutrition Interaction:

    a. Certain medications require the enteral nutrition to be held prior to administration and after administration of the medication. These medications include but are not limited to: carbamazepine, warfarin and some quinolones. Follow manufacturer recommendations or consult with the pharmacist if needed.
    b. ARMC Dietitians identify potential food/drug interactions, provide education, and make recommendations as appropriate.

3. Oral Phenytoin
   Enteral Nutrition is held 60 minutes prior to administration and 60 minutes after administration of oral Phenytoin. It is recommended that oral Phenytoin be changed to intravenous (IV) Phenytoin for optimum blood levels.
4. When medications must be administered with food such as nonsteroidal anti-inflammatory drugs (NSAIDs), flush feeding tube with 30 ml of sterile water, see above, pre and post drug administration then restart feeding.

5. Some medication may change the osmolarity of the feeding formula and cause diarrhea. Monitor patient closely and report occurrences to Provider.

REFERENCES:

Joint Commission Standards
Perry, Potter, Ostendorf (2018), Clinical Nursing Skills & Techniques, 9th Edition. Mosby, Elsevier.
Mosby Skills (On-line): Feeding Tube Verification of Placement
American Society for Parenteral and Enteral Nutrition, 2017
Initial and Ongoing Verification of Feeding Tube Placement in Adults. (2016). *Critical Care Nurse*, 36(2). Doi:10.4037/ccn2016141
Institute for Safe Medication Practices (ISMP), 2014
Mc Clave, S., et al. (2016) Guidelines for the provision and assessment of nutrition support, therapy in the adult critically ill patient; Society of Critical Care Medicine, and America Society for Parenteral and Enteral Nutrition. *JPEN* v.40[2], page 170-171.
Seres, D. (2017) Nutrition Support in Critically Ill Patients: Enteral Nutrition.
Department of Nursing (DON) Policy 506.00, Tubing Misconnection Prevention.
DON Policy 571.00 Medication Administration, General Guidelines and Safe Practices
Nutrition Services Policy 904.01 Consultation-Enteral Feeding

REPLACES: **Department of Nursing (DON) Policy 555.01, Enteral Tube Feeding Procedure**

DEFINITIONS:

Dobhoff tube: A narrow-bore flexible tube with a diameter of 4 mm, used to deliver enteral nutrition.
Levin tube: Single-lumen tube with holes near the tip
Salem sump: Has 2 lumens, one for removal of gastric contents and one to provide an air vent to prevent suctioning of gastric mucosa into the eyelets at the distal tip

ATTACHMENTS: **Attachment A: Gastrointestinal (GI) Tube Management**

APPROVAL DATE:

N/A	**Policy, Procedure and Standards Committee**
2/23/21	**Nursing Standards Committee** **Applicable Administrator, Hospital or Medical Committee**
3/15/21	**Quality Management Committee** **Applicable Administrator, Hospital or Medical Committee**
3/25/21	**Medical Executive Committee** **Applicable Administrator, Hospital or Medical Committee**
	Board of Supervisors **Approved by the Governing Body**

REPLACES: **N/A**

EFFECTIVE: _____

REVISED: **N/A**

REVIEWED: **N/A**

Attachment A

GASTROINTESTINAL (GI) TUBE MANAGEMENT

PREPYLORIC TUBES					
TYPES OF TUBES:	**LEVINE TUBE**	**SALEM SUMP**	**DUBHOFF FEEDING TUBE (NON-WEIGHTED)**	**GASTROSTOMY TUBE**	**PERCUTANEOUS ENDOSCOPIC GASTROSTOMY TUBE**
DESCRIPTION	Single-lumen tube with holes near the tip	Tube has 2 lumens: one for removal of gastric contents and one to provide an air vent to prevent suctioning of gastric mucosa into the eyelets at the distal tip	A non-weighted clear polyurethane tube designed for nasogastric feeding.	Inserted surgically, terminates in the stomach	Inserted endoscopically, minimally invasive
PURPOSE	Used for enteral feeding. May be used for decompression	Primarily for gastric decompression. May be used for short term enteral feeding.	Used for feeding or administering medications	Used for feeding and allows administration of crushed medications	Used for feeding and allows administration of crushed medications
SPECIAL CONSIDERATIONS	Check for signs and symptoms of aspiration, tube migration and dislodgment	The air vent (blue pigtail) should be positioned above the level of the stomach to avoid backflow. An anti-reflux valve helps to prevents gastric contents from seeping out.	Check for signs and symptoms of aspiration, tube migration and dislodgment	Poses risk of attaching onto stomach wall and rendering it ineffective	Check for surgical site infection/leakage
PLACEMENT VERIFICATION	Confirmed radiographically	Confirmed radiographically	Confirmed radiographically	Abdominal surgical site	Abdominal surgical site
FEEDING	Follow prescribed rate from Provider (i.e., continuous, cyclic, bolus, and intermittent)				
GASTRIC RESIDUAL VOLUME (GRV)	As ordered	As ordered	Check patient for abdominal distension, do not aspirate as cannot obtain gastric residuals		
SUCTIONING	Use low-intermittent suction for decompression	Use low-intermittent suction or continuous suction. Do not clamp off the air vent			

IRRIGATION/ FLUSHING	Use purified water for patients in Intensive Care Units (ICUs), patient receiving chemotherapy or immunocompromised patients or as ordered by Provider				
TROUBLESHOOTING/ MAINTAIN PATENCY	Flush with solution as ordered. Check medications that may clog the tube; minimize drug-nutrient interactions; and check drug dosage forms that are not appropriate for administration				
CARE AND MAINTENANCE	Mark and document the exit site at initial placement. Check external length of feeding tube every shift to monitor tube migration. Assess skin at nares, lips, and oral mucosa for any redness or breakdown every shift.			Check surgical site and cover with a dressing per order.	
DISLODGMENT	Notify Provider				
DURATION	4-6 weeks	4-6 weeks	Longer than 4 weeks	Longer than 4 weeks or permanent	Long term or permanent

POSTPYLORIC TUBES				
TYPES OF TUBES:	**WEIGHTED DOBHOFF TUBE**	**NASOJEJUNAL TUBE**	**GASTRIC-JEJUNAL TUBE**	**PERCUTANEOUS ENDOSCOPIC TUBE**
DESCRIPTION	Small bore tube with stylet or guidewire, and a weighted end to help guide it through the pyloric sphincter	Commonly placed in Medical Imaging under fluoroscopy, can be placed at bedside with x-ray confirmation. Terminates in the jejunum.	Terminates in small intestine. Can be used in patients requiring both stomach drainage and intestinal feeding at the same time.	Terminates in small intestine. Preferred for patients who need single tube for feeding into small bowel.
PURPOSE	Used for feeding into the small intestines	Sample gastrointestinal fluid and to provide decompression for small bowel obstruction or ileus	Used for feeding or administering medications	Required for gastrectomy or esophagectomy with gastric pull-up
SPECIAL CONSIDERATIONS	Check for signs and symptoms of aspiration, tube migration and dislodgment	Poses risk of nasal mucosal damage or sinusitis with longer use. Check for tube migration.	Poses risk of jejunal extension, causing it to curl back into stomach or protrude out through skin	Check for surgical site infection and/or leakage
PLACEMENT VERIFICATION	Confirmed radiographically	Confirmed radiographically	Confirmed radiographically	Abdominal surgical site
FEEDING	Follow prescribed rate from Provider (i.e., continuous, cyclic, bolus, and intermittent)			
GASTRIC RESIDUAL VOLUME (GRV)	Check patient for abdominal distension, do not aspirate as cannot obtain gastric residuals			

IRRIGATION/ FLUSHING	Use purified water for patients in Intensive Care Units (ICUs), patient receiving chemotherapy or immunocompromised patients or as ordered by Provider			
CARE AND MAINTENANCE	Mark and document the exit site at initial placement. Check external length of feeding tube every shift to monitor tube migration. Assess skin at nares, lips, and oral mucosa for any redness or breakdown every shift.		Check surgical site	
DISLODGMENT	Notify Provider			
DURATION	Short-term (4-6 weeks)		Long-term	Long-term or permanent

ENTERAL TUBE EQUIPMENT SAFETY AND INFECTION CONTROL
PATIENT SAFETY: Prevent medical tubing misconnection • Clearly label feeding tubes, feeding pumps, administration sets, medications, flushes and bolus feeding syringes, and connectors • Discard tubing, administration set, and feeding syringes every 24 hours or per manufacturer guidelines

OTHER TUBES (LARGE BORE, PRESSURE TUBES)
Ewald Tube: A large-bore tube with wide proximal outlets for removing gastric contents. Primarily used in the Emergency Department and the Intensive Care Units (ICU). Blakemore-Sengstaken Tube: Used to treat upper gastrointestinal bleeding from esophageal varices. Can be inserted orally or nasally. Intubation is strongly advised to secure the airway before insertion