**INDICATIONS FOR TUBE FEEDING**

Complete nutrition supports development, growth, and healing. If the ability to eat or swallow is lost, or the patient is unable to tolerate food, enteral feeding can sustain life, nourish, and even increase body weight. Tube feeding is also used to supplement a deficient food and fluid intake. The feeding procedure can be managed safely and economically at home, away from the hospital setting. A surgical gastrostomy provides access to the stomach if long term nutritional support is necessary.

Pure medical grade silicone construction makes MIC Feeding Tubes durable, yet soft and comfortable to wear. They are also translucent, allowing visualization of the inside of the tube above the skin line. All MIC Enteral Feeding Tubes are latex free.

**MIC PEG**

PEG stands for Percutaneous (through the skin) Endoscopic (use of a flexible lighted tube to visualize tube placement) Gastrostomy (surgical opening into the stomach). PEG Tubes (0150 and 0160 series) and Gastrostomy Tubes (0100 and 0110 series) are the same in function. PEGs have internal retention domes; G Tubes have retention balloons. PEGs have replaceable feed ports; G Tubes do not because the feed port houses the balloon inflation valve.

As the physician inserts the PEG Tube, a dilator tip on the tube itself helps to create a stoma the size of the PEG Tube. Gradually, the stoma heals around the tube forming a sealed tract. The internal retention dome prevents accidental removal of the PEG assuring that the tract forms correctly. The PEG Tube must be removed by a physician once the tract is healed. A balloon G-Tube that can be safely and easily changed at home may replace it.
CAUTION
DO NOT ATTEMPT TO REMOVE A PEG. SERIOUS COMPLICATIONS CAN RESULT. PEG TUBES MUST BE REMOVED BY A PHYSICIAN OR CLINICAL SPECIALIST.

If the PEG SECUR-LOK® Ring is sutured to the skin, care for the stoma is as follows: (Fig. 2)

1. Wash hands thoroughly with soap and water.
2. Saturate a cotton-tipped applicator with a 1/2 strength solution of hydrogen peroxide and sterile water.
3. Gently soften and remove any crusts from around and underneath the disc.
4. Finish with a clean, dry applicator. Do not touch the area with your hands. After the sutures are removed, follow the routine tube care instructions on page 6 of this booklet.

PEG FEEDING ADAPTERS
To replace an adapter, remove existing adapter from the PEG Tube. Trim stretched or torn tubing with scissors, then reconnect the new adapter.

ADAPTER SIZES
(Universal)
0135-14 fits 14 Fr PEG
0135-20 fits 20 Fr PEG
0135-24 fits 24 Fr PEG

(Bolus)
0136-14 fits 14 Fr PEG
0136-20 fits 20 Fr PEG
0136-24 fits 24 Fr PEG

Bolus adapters are useful for drainage and/or stomach decompression because they do not have universal connectors inside the feed ports.
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GLOSSARY OF TERMS

ASPIRATION: Accidentally inhaling liquid into the windpipe and/or lungs.

BOLUS FEEDING: Large amounts of formula delivered through the tube.

CONSTIPATION: Bowel movements (stools) sometimes painful, and difficult to pass.

CONTINUOUS FEEDING: Formula delivered at a constant rate throughout the day (or night) without interruption.

DIARRHEA: Frequent, loose, or watery bowel movements.

ESOPHAGUS: The passage in the throat through which food passes from the mouth into the stomach.

FEEDING PUMP: A small machine, plug-in or battery powered, that automatically controls the amount of formula being delivered through the feeding tube.

FEEDING SET: Tubing that connects the feeding container to the feeding tube.

FEEDING TUBE: Tube through which formula flows into the stomach or intestine. (gastrostomy or jejunostomy tube)

G TUBE: Gastrostomy tube. A tube that passes through the skin into the stomach. Also called feeding tube.

GASTROESOPHAGEAL REFLUX: Backing up of formula or gastric fluid from the stomach into the esophagus.

GASTRIC DECOMPRESSION: The removal of gas or fluid from the stomach. (Also called “venting”)

GASTROSTOMY: A surgical opening (stoma) through the skin into the stomach.

GRANULATION TISSUE: Fleshy projections on the surface of the stoma that form fibrous scar tissue.

GRAVITY DRIP: Formula flows into the feeding set by gravity.

INTERMITTENT FEEDING: Small amount of formula given frequently.

NUTRIENTS: Food or any substance that nourishes the body—protein, carbohydrate, fat, vitamins, minerals, and water.

STOMA: Surgical opening into the body.

STOMACH RESIDUAL: Stomach contents 4 hours after feeding.

SYMMETRICAL: Correspondence in shape, size, and relative position of parts on opposite sides.

MIC GASTROSTOMY TUBE

FEEDING PORT: MIC series 0100 tubes have a “universal connector” inside the feed port to prevent the port from leaking after repeated use. (Fig. 3) If your formula delivery set does not fit the connector, use a MIC 0105-6 extension set to connect the tubes. MIC Bolus Gastrostomy Tubes, series 0110, have no universal connectors or medication ports. To drain or decompress the stomach, use a Bolus Gastrostomy Tube. The Bolus Port accepts most connectors. If additional tubing length is needed, MIC 0105 extension sets may be purchased from your medical supplier or from Ballard Medical Products Customer Service.

MEDICATION PORT: The medication port accepts the Luer connectors on most syringes. The port joins the main tube lumen, there is no separate channel. Before and after giving medication, stop the formula and flush water through the medication port to clear the tube. If your feeding set connector fits into the medication port, you may also use the port to give formula.

SECUR-LOK® RING: If both the tube and the ring are dry, friction holds them together preventing the tube from sliding inside the stomach. Position the ring 3 mm (the thickness of a dime) above the skin. (Fig. 4) IF THE RING POSITION IS TOO CLOSE FOR VERY LONG, A PRESSURE INJURY COULD RESULT.

BALLOON PORT: This port houses the balloon valve. DO NOT INADVERTENTLY GIVE MEDICATION OR FORMULA INTO THE PORT. If this happens, the valve may dog and the gastrostomy tube will be more difficult to remove from the stomach.
GASTROSTOMY CARE GUIDE

RETENTION BALLOON
Besides anchoring the tube inside the stomach, the balloon helps to keep the stoma from leaking. The 20 cc label on the balloon port is the balloon CAPACITY, not the recommended volume. Fill the balloon with 7-10 cc distilled water or saline. DO NOT USE AIR TO INFLATE THE BALLOON. Air will migrate over several hours causing the balloon to deflate just as a regular balloon gradually deflates. The recommended volume for the Low Volume Balloon is 2-3 cc. (Fig. 5)

CARE AND USE
STOMA AND TUBE CARE
To ensure a healthy gastrostomy site (stoma), keep the skin clean and dry. Wash the area with soap and water, including the tube and the bottom of the SECUR-LOK® Ring. Rotate the tube 360 degrees (a full circle) every day to prevent the tube from adhering to the stoma tract. Dry the skin surface well after tube care. Tape restricts air flow and may break the skin down resulting in infection. If possible, avoid dressings.

CAUTION:
REPORT PROLONGED REDNESS, IRRITATION, SORENESS OR UNUSUAL DRAINAGE TO THE PHYSICIAN

ACTIVITY
After the gastrostomy heals, most people resume normal activity. Before bathing or swimming, close the feeding and medication ports tightly. A physician or clinical specialist should direct your activity level.

ORAL CARE
Tube feedings deprive the mouth of the stimulation provided by normal eating. Dental plaque accumulates faster than usual. Plaque harbors bacteria that causes tooth decay and gum infection. To reduce bacterial growth and increase circulation to the gums, brush teeth and gums twice daily.

GASTROINTESTINAL DISTRESS
DIARRHEA
The most common complication of enteral feeding is diarrhea. Possible Causes include the formula composition, a new medication, or a change in feeding routine. Other causes may be rapid formula administration, contaminated formula, or illness. Try diluting the formula with water and giving it at room temperature. Temporarily decrease the flow rate. If diarrhea is severe and persistent, a physician should direct the care.


VOMITING
This may allow gastric contents to escape into the lungs increasing the risk of pneumonia. If the patient becomes nauseated, vomits, chokes, or has feeding or breathing difficulty during a tube feeding, stop the feeding at once. Disconnect the delivery set and evacuate the stomach using a catheter tip syringe. Wait 1-2 hours before feeding. Always check the position of the tube. Children who vomit frequently may outgrow it as their anatomy matures.

CONSTIPATION
Inactivity, a change in formula, medication, or feeding routine can cause constipation. A physician or dietitian can advise the addition of fiber and liquid to the diet to correct the problem.

TRACKING PROGRESS
When tube feedings are first started, your daily record of intake and output may help your clinician evaluate the nutritional adequacy of the prescribed formula and water. For the first week or two, and in illness, keep a running total of daily feeding, water and gastric residual measurement. A weekly body weight may be helpful. The cause of poor growth is an insufficient calorie intake.
GASTROSTOMY CARE GUIDE

8. Cleanse and dry the stoma. Gastric leakage and/or slight local bleeding is normal.

9. Carefully position the SECURO-LOK® Ring without putting tension on the tube 3 mm above the skin level (the thickness of a dime).

10. To ensure correct tube placement:
   a. Listen for air. Place your ear or a stethoscope against the abdominal wall halfway between the navel and the left nipple. Inject 10-20 cc air into the feed port and listen for the sound of air entering the stomach.
   b. Use the catheter tip syringe to withdraw stomach contents back into the syringe. It may help to position the patient on the left side so stomach contents gravitate toward the tube tip.

11. Record the cm number on the tube above the top of the SECURO-LOK® Ring in the Patient Information Section of this booklet.

12. Inspect the stoma site for moisture. If the stoma leaks, re-check the balloon position (Step 6) and the SECURO-LOK® Ring position. Adjust if necessary.

USE UP TO 5 cc IN THE 5 cc BALLOON (LOW VOLUME). THE CORRECT VOLUME IS 2-3 cc's.

USE UP TO 30 cc IN THE 20 cc BALLOON (STANDARD BALLOON). THE CORRECT VOLUME IS 7-10 cc's.

NOTE: NEVER FEED THROUGH A G TUBE IF THERE IS ANY QUESTION THAT THE TIP MAY NOT BE INSIDE THE STOMACH.

GASTRIC DECOMPRESSION (VENTING)
To passively decompress the stomach, open the feed port. Position the tube to empty into a drainage receptacle using an extension set such as the MIC O105. If the patient is nauseated or vomiting, use a Monoject® catheter tip syringe to suction the gas or liquid from the stomach. Turning the patient to the right side may allow the gas to rise and escape through the tube. Do not use force to suction stomach contents. If you do not get results, try repositioning the patient, or consider that the stomach may be empty. (Fig. 6)

ENTERAL FEEDING PROCEDURES

ENTERAL FEEDING SUPPLIES
- Formula
- 60 cc catheter tip Monoject® syringe
- Pump stand or IV pole
- Pump controller
- Formula bag
- Water
- At least one 12 cc Luer syringe (for medication)
- Extension tube (optional)
- Y Connector (optional)

PREPARING TO FEED
1. Wash hands with soap and water. (Fig. 7)
2. Pour formula into a clean bag or use a prefilled bag.
3. Purge the delivery set tubing with formula to push the air out, then damp the tubing.
4. Flush the gastrostomy tube with 20 cc water.
5. Elevate the patient's head and torso 30-45 degrees.
6. Set the pump flow rate or adjust the delivery set clamp.

Handwashing is the single most important defense against infection.
PREPARING TO FEED (cont'd)

7. To verify that the tip of the tube is inside the stomach:
   a. Insert a catheter tip syringe filled with 10-15cc air into the feed port.
   b. Place your ear or a stethoscope over the left side of the stomach just above the waist.
   c. Depress the syringe plunger to inject air into the tube and the stomach. Listen for bubbling as the air enters the stomach.
   d. If you do not hear bubbling sounds, try again, or aspirate for gastric residual.

Aspirating for gastric residual:
   a. Turn the patient to the left side allowing stomach contents to flow toward the tube tip.
   b. Insert a catheter tip syringe into the feed port.
   c. Withdraw stomach contents into the syringe.
   d. Record the date, time, and the amount withdrawn. Also record the time the previous feeding was given and the amount.
   e. If the amount you withdraw from the stomach is more than 1/2 the amount of the previous feeding, feed the patient cautiously. You may wait to feed, or decrease the flow rate.
   f. If little or no stomach fluid is withdrawn, the stomach might be empty.

BECAUSE FREQUENTLY DELAYED OR SLOW FORMULA RATES MAY DEPRIVE THE PATIENT OF ESSENTIAL NUTRIENTS, DISCUSS THE PLAN OF CARE WITH THE PHYSICIAN OR CLINICAL SPECIALIST. MANY PATIENTS NEED EVERY CALORIE THAT IS PRESCRIBED TO MAINTAIN OR GAIN WEIGHT.

FEED ONLY AFTER CONFIRMING THAT THE TIP OF THE TUBE IS INSIDE THE STOMACH

REPLACING THE TUBE

This procedure can be safe and easy. Ask your nurse or clinical specialist to teach you the procedure before trying it at home.

Change the gastrostomy tube:
   a. The tube is obstructed and cannot be cleared, the tube accidentally falls out, is pulled out, or a clinical specialist or physician orders the change. Note: You may need a second person to restrain a child while changing the tube.
   b. Wash your hands.
   c. Test the new tube for:
      a. Ring function. It should be difficult to move up and down the tube. (Fig.13)
      b. Balloon integrity. Fill a Luer syringe with 5 cc saline or distilled water and inflate the balloon. If the balloon sticks to the tubing, squeeze and bend it to "unstick" the balloon and to check for leaks. Deflate the balloon with the syringe.
   d. To remove the used tube from the stomach:
      a. Withdraw the water from the balloon with a syringe.
      b. Place a flat hand firmly against the abdomen, and gently but firmly pull the tube out. (Fig.14)

To insert a new tube:
   1. Wait 10-15 minutes before inserting the new tube. The stoma will constrict enough to tightly fit the new tube.
   2. Wash and dry the stoma and skin.
   3. Lubricate the tip of the new tube with a water soluble agent. DO NOT CONSISTENTLY USE PETROLEUM PRODUCTS.
   4. Hold the tube at a 90 degree angle to the abdomen. Gently but firmly insert it 2-3 inches into the gastric stoma. (Fig.15)
   5. If you meet resistance, completely remove the tube and try again.
   6. Inflate the balloon with distilled water or saline while holding the tube in place.
   7. Snug the balloon against the inside stomach wall by gently pulling the tube out until it stops.
GASTROSTOMY CARE GUIDE

TUBE PROBLEMS

TUBE MIGRATION
If the balloon slips away from the inside stomach wall, it could cause an intestinal obstruction. Pressure may build inside the stomach, causing leaking from the stoma, nausea and/or vomiting. Before every feeding, know the length of the tube that is outside the body. The tube number above the SECUR-LOK® Ring must be the same as the number written in the information section. If they are different, the tube must be adjusted. Wash and rinse the tube and both sides of the ring. Remove any oil on the tube with alcohol if necessary. Pull the tube out of the stoma until the correct number is visible. Adjust the ring 3 mm above the skin. The matching number must be above the ring. If the above procedure is confusing, measure the visible tube length with a ruler. Write the length down, and always check it before starting a feeding. (Fig. 12)

If the tube looks longer, check the number above the ring. The balloon may have a slow leak, allowing it to slide out of the stomach. Push the tube in 2-3 inches. Check the balloon volume. Return the tube and the ring to their original positions, then recheck the balloon volume in 2-3 hours. A skin level feeding tube such as the MICKEY® prevents this from happening.

BALLOON CHECK
Measure the amount of water inside the balloon once every week. To do this, insert a syringe into the balloon valve and withdraw the water. If the amount has decreased, fill the syringe with the correct amount of water, and inject it into the balloon port.

TUBE OBSTRUCTIONS
Adherence of residue to the inside the tube causes obstructions. The residue consists of hardened stomach contents, medication, and/or formula. Avoid this by flushing the tube with water before and after each feeding. Separate medication from the formula. To decode an obstructed tube, fill a catheter tip syringe with warm water and inject the water gently into the tube. Repeat until the blockage clears. If the obstruction is visible inside the tube above the skin line, massage the tube and flush it with warm water to clear.

CAUTION
DO NOT USE FORCE TO FLUSH ANY SILICONE TUBE. THE TUBE MAY RUPTURE. IF THE OBSTRUCTION WILL NOT CLEAR, REPLACE THE TUBE.

METHODS OF DELIVERY

PUMP CONTROLLED METHOD
Pump controllers deliver formula accurately and reduce stomach distention and esophageal reflux by decreasing the amount of air that enters the stomach. This benefits infants because there is usually no need to burp them after feeding. Formula is given over 8-24 hours on an intermittent or continuous schedule. Continuous formula administration decreases feeding intolerance problems and promotes weight gain. Formula given during sleep hours adds calories to supplement daytime feedings. Flush the G Tube with water every six hours. (Fig. 8)

GRAVITY METHOD
Bags with manual flow regulators are used for gravity feeding. The only other necessary equipment is an IV pole. The formula may clog the tube or run poorly at flow rates slower than 100 cc per hour, and the amount given is often inaccurate. Hang the bag about 2 feet above the tube. Count the flow rate at the beginning of the feeding. Recheck the rate after a few minutes. It will probably have slowed and need to be adjusted. To prevent clogs, flush the G Tube with water every six hours. (Fig. 9)

BOLUS METHOD
Bolus feedings are a convenient and natural way to feed if tolerated by the patient. A measured amount of formula is given 3 or 4 times daily like a meal. The procedure takes 5-10 minutes, or the rate can be lowered if it is more comfortable for the patient. Use a 60 cc catheter tip syringe. Push thick formula or pureed table food into the G Tube with the syringe plunger. To refill the syringe, remove it from the G Tube and close the tubes feed port. To give regular
GASTROSTOMY CARE GUIDE

BOLUS METHOD (cont’d)

To reuse a formula bag, wash it the feed port. syringe or delivery set and close the stomach. Disconnect the extension tube to connect the syringe to the gastrostomy tube. Increase or decrease the flow rate by raising or lowering the syringe. (Fig. 10)

AFTER FEEDING

Pour a pre-measured amount of water into the syringe or formula bag before the last of the formula runs down the tube. This keeps air from entering the stomach may begin to constrict within 30 minutes. If you are not comfortable inserting a G Tube, cover the stoma with a gauze dressing and tape it in place. Take the patient to the hospital or clinic.

Bolus gastrostomy feeding

Fig. 10

MEDICATION

Fill two Luer tip syringes with water to flush the tube before and after giving the medication. If a pump feeding is in progress, “PAUSE” the infusion pump (clamp the delivery tubing if using a gravity system). Open the medication port and flush the tube with 10-20 cc water. Give the medication and follow it with 10-20 cc water. Close the medication port and restart the feeding. Use liquid medication whenever possible. Crush tablets or pills, then disperse them in water. Give medication 1-2 hours between feedings when possible. (Fig. 11)

Fig. 11

DO NOT
• MIX TWO OR MORE MEDICATIONS TOGETHER.
• MIX MEDICATION WITH FORMULA.
• MIX OTHER MEDICATION WITH ANTACIDS, MAGNESIUM, CALCIUM OR IRON SUPPLEMENTS.
• MIX ENTERIC COATED OR TIME RELEASE CAPSULES.

GASTROSTOMY CARE GUIDE

TUBE REPLACEMENT

With daily stoma and tube hygiene, the G Tube can remain in the stomach until it eventually falls out. However, the physician or clinical specialist may want to change it at regular intervals.

Keep an extra G Tube the same Fr size or one Fr size smaller. Without a tube in place, the stoma may begin to constrict within 30 minutes. If you are not comfortable inserting a G Tube, cover the stoma with a gauze dressing and tape it in place. Take the patient to the hospital or clinic.

Fig. 11

PEDIATRICS

Infant tube feedings begin with frequent tiny amounts of formula. With weight gain, the stomach capacity gradually increases and the amount of formula given can be increased. If the stomach gets too full, formula may leak from the stoma, or the infant may vomit or burp up formula. If this happens, return to smaller more frequent feedings, or slow the formula flow rate. To ensure nutritional requirements are met, a physician or clinical specialist should direct the care.

BABY’S MOUTH

To associate oral gratification with a full stomach, encourage the tube-fed infant to suck a pacifier or thumb as the feeding is administered. The sucking stimulus is present despite the absence of oral intake. Holding the infant upright, cuddling, and gently touching during feeding provide a sense of security. Affection should be a priority, too, much is not possible.

NORMAL ACTIVITY

As active toddlers roll, scoot, and learn to walk, they develop and refine important motor skills. Prevent accidental removal of the gastrostomy tube without discouraging physical activity. To protect the tube inside clothing or tape it to the abdomen if necessary. Overalls and shirts that snap between the legs will protect the tube better than two piece clothing. Consider trying a skin level feeding tube such as the MIC-Key® to decrease the incidence of accidental tube removal.

STOMA AND SKIN CARE

BLEEDING STOMA

Occasional slight bleeding from the stoma is normal and should be expected during a tube change. If the bleeding increases or continues, or if stomach contents contain blood, notify a physician.

GRANULATION TISSUE

Granulation tissue forms as the body tries to heal the stoma. The tissue may proliferate and require treatment. If continuous bleeding occurs or a large amount of tissue builds up, call a physician. A large amount of granulation may allow gastric contents to leak.
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