

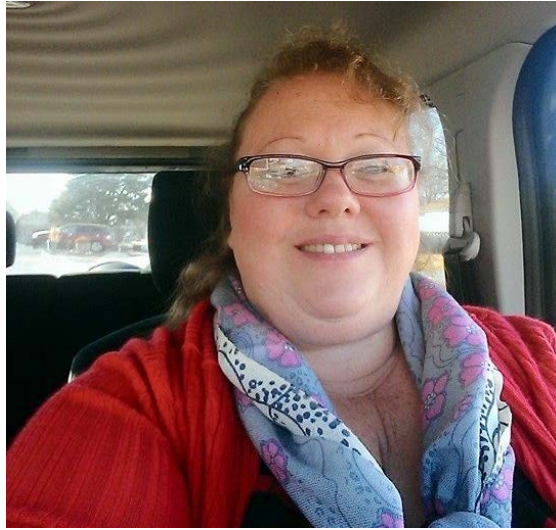
# Nursing Considerations for Enteral Tubes

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# Objectives

- Discuss the indications and uses of a gastrostomy.
- Describe Nursing assessment of pre and post-op care.
- Discuss feeding types.
- Identify complications of g tubes
  - prevention of complications
  - treatment of complications
- Identify Nursing Considerations for feedings.
- Identify teaching points for staff and parents.
- Enfit
- Case studies

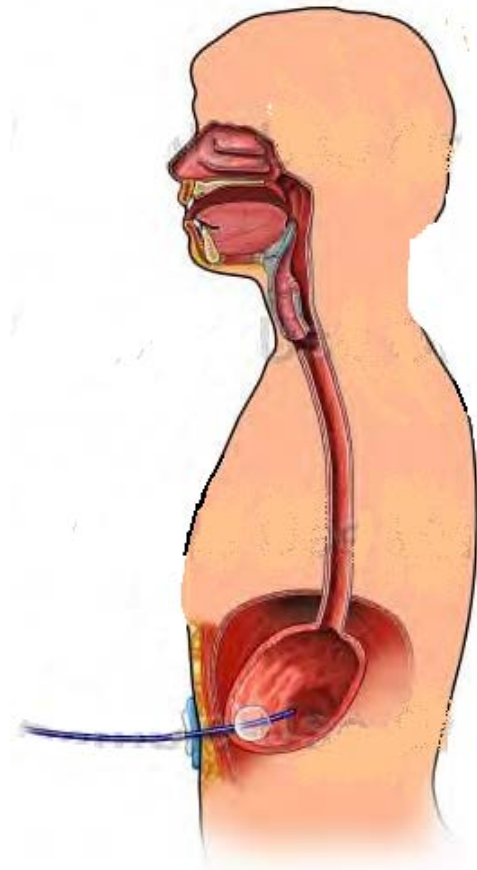
# Disclosures



I have no disclosures at this time.

# Why a Feeding Tube?

Placed when oral intake is not adequate to meet Nutritional Goals



# Pediatric Nutrition Goals

- Provide nutrients for normal organ function
- Proper growth and development
- Protection from disease
- Part of a daily routine

# Feeding Tube Indications

- Unable to swallow normally
- Inadequate oral nutrition
- Can be Permanent or Temporary

# Common Diagnosis

- Congenital Anamolies
  - Esophageal fistula/Tracheoesophageal fistula
  - Cleft lip/palate
  - Intestinal Atresia's
  - Gastroschisis
- Genetic/Chronic illness
  - Down's Syndrome                      Congenital heart disease
  - Failure to Thrive                      Recurrent aspiration pneumonia
  - GERD                                      Oral aversion
  - Cystic fibrosis                          Transplant
  - Cancer

# Common Diagnosis

- Neurologic dysfunction - Temporary or Permanent
  - Closed Head Injury
  - Cerebral Palsy
  - Encephalopathy
- Feeding time >1 hour



# Types of Tubes

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- Nasogastric/Nasojejunal
- Gastrostomy
- Transgastric-jejunal
- Jejunal

# Placement Methods

- Manual

- To ensure proper measurement tube should be measured from the tip of nose to the ear lobe to 1 inch below the xiphoid process. The tube should be marked at this place. Tube is then inserted through the nose into the stomach until the mark reaches the nostril. Tube is then secured in place. Proper placement should be checked prior to use per institutional protocol.
  - Xray
  - CO<sub>2</sub> indicators
  - Insert air

- Surgical

- Stomach is brought up to the abdominal wall and sutured in place. Then an opening is made and tube is placed.

- Percutaneous Endoscopic Gastrostomy

- Endoscopy is performed and a guidewire is passed through the abdominal wall incision into the stomach. The guidewire is attached to the g tube with a mushroom device pulled down through the mouth into the stomach and through the abdominal wall incision. Must wait 1-3 months for stomach wall to adhere to the abdominal wall before changing.

- Radiologically Guided

- Using Ultrasound the liver and spleen are identified and marked
- Under fluoroscopy a needle is passed through the abdominal wall into the stomach. A guidewire is placed and then dilators are passed over the guidewire to create the tract. When the tract is adequately sized the G tube is threaded over the guidewire and into the stomach. Must wait 1-3 months for healing before changing but can be converted to a G-J if needed.

# Surgical Gastrostomy or PEG

- Anatomy
- Previous abdominal surgeries
- Significant reflux
- Size of the child
- Complications
- Cost

# Parental vs. Enteral Feedings

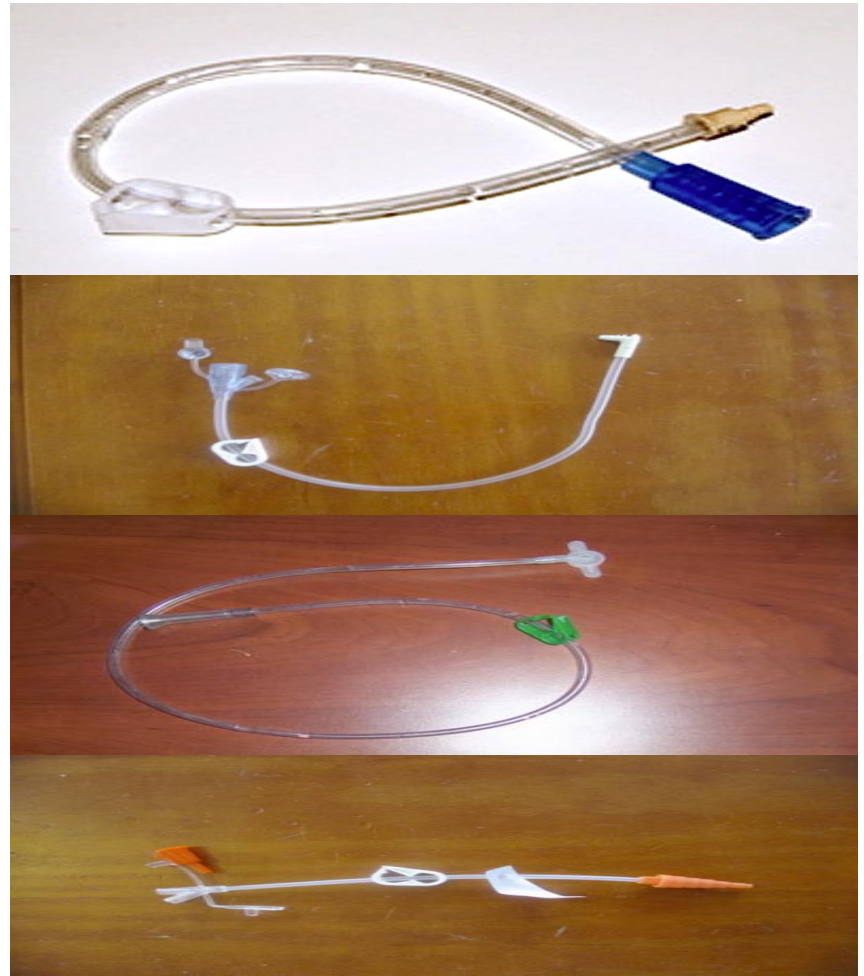
- Parental
  - Cholestatic liver disease
  - Metabolic disturbances
  - Line sepsis
  - Bacterial translocation
- Enteral
  - Prevents gut atrophy
  - Encourages villi growth
  - Increases bowel motility
  - Prevents bacterial overgrowth

# Feeding Tubes Components

- Three components present
  - Internal portion
    - Mushroom
    - Balloon
    - Dome
    - Cross
    - Collapsible ring
  - External portion
  - Feeding connector
- Tubes can differ at all three places
- Catheter Tube/Low profile button

# Feeding Connectors

- Straight Adapter
- Right Angle Adapter
- Genie Adapter
- Corpak



# When is the right time?

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When nutritional support will be needed  
beyond 4-12 weeks dependent on author

# Decisions

- Family acceptance
  - Innate need to feed children
  - Another loss of normalcy for this child
- Nurse's role
  - Support
  - Help family formulate their questions
  - Answer questions
  - Emphasize the importance of family's role in recovery
  - Allow family time to grieve





# Pre Op Care

- Offer anesthesia consult especially for children with complicated history
- Vital signs
- Signed consent
- Maintain NPO status
- History
- Allergies
- Medications

# Post Op Care Assessment

- Vital signs including pain
- Normal Surgical assessment
  - Head to Toe assessment
  - Hydration status
  - Accurate Intake and Output
- Pain Management



# Post Op Care and Assessment

- Abdominal assessment
  - Look, Listen, Feel
  - Check the G tube site
  - Bowel sounds
  - Palpate abdomen

# Care of The Site

- Assess the site daily for signs and symptoms of infection redness, swelling, pain, drainage, strong odor.
- Small amounts of serosanguinous drainage and redness is normal.

# Care of the Site

- Site should be cleaned twice daily with saline for the first week and then soap and water
- Tube should be rotated with each cleaning
- Split non-adherent dressing should be changed with cleanings
- Tub baths/swimming allowed after 1 week
- Only use ointment if there is swelling

# Care of the Tube

- Protect the tube and site
- Prevent excessive movement of the tube
- Prevent the tube from being pulled out or becoming tangled
- Stabilize the tube with bar/disc
  - 1/4 inch away from skin
  - Can tape down
    - Taping procedure

# Complications

- Hemorrhage
- Bowel Perforation
- Liver laceration
- Peritonitis
- Wound separation
- Infection
- Tube migration
- Aspiration
- Necrotizing Fasciitis
- Bowel obstruction
- Death

# Complications

- Skin infections
- Tube migration/Bumper Buried
- Leakage
- Ulcerations
- GERD
- Bacterial Overgrowth
- Dumping Syndrome
- Granuloma
- Tube clogged



# When To Start Feeding

- 1 – 3 hours post surgery check for bowel sounds prior to starting
- Pedialyte starting with  $\frac{1}{2}$  maintenance continuous feedings
- Advance slowly to full strength feeds within 72 hours

# Feedings

- Bolus
- Continuous
- Combination
- Pump
- Gravity
- Prescriptions should be obtained

# Prescriptions

- Formula
- Total amount/day
- Bolus/continuous/combo/pump/gravity
- Oral feedings

# Feedings

- Bolus Vs. Continuous
  - Type of tube
  - Placement of the tube
  - Diagnosis of the patient
- Bolus feedings **should never** be given through a Jejunal port

# Feeding equipment

Gather all supplies that are necessary

- Bolus-Large 60ml cath tip syringe
- Pump-Pump and feeding bags
- Pole for gravity or pump feedings
- Feeding extensions/adapters
- Formula
- Paper drape/towel
- Gloves

# Feeding Procedure

- Put on your gloves.
- Mix formula and pour total amount to be given into a graduate/if using a pump use a feeding bag.
- Drape the towel over the patient's abdomen next to the gastrostomy.
- Patient should be upright at least 30 degrees.
- Check placement of the tube prior to each feeding.

# Feeding Procedure Pumps

- Attach the feeding adapter to the feeding bag.
- Clamp the tube prior to pouring the formula in the bag.
- Prime the tubing (sometimes done by the pump itself).
  - Make sure primed through the feeding adapter.
- If using a pump, hang bag on the pole and thread the tubing through the pump.
- Using a syringe filled with room temperature water (usually 30-60 ml) flush the gtube.
- Attach the Feeding extension/adapter to button/g-tube
- Open the clamp
- Turn on the pump with correct settings.



# Feeding Procedure Syringe/Gravity

- Hand prime the adapter/extension can do this with the water for flush and clamp the tube
- Connect the syringe to the extension/adaptor for bolus or the feeding bag tubing for gravity feedings.
- Open clamp and allow to flow either turning on the pump or pouring formula into the syringe.
- If using gravity formula should not go in faster than over hour dependent on amount to be infused.
- When formula complete then flush with warm water to clear the tubing.
- Close the clamp and disconnect the tubing.
- Close the gastrostomy.





# Cleaning the tubing

- Flushing should be done before and after medication administration, and feedings. This will keep the tube from becoming clogged
- Wash out rinse or wash out your tubing with each feeding
- Can use dish soap and warm water
- Rinse thoroughly
- Some doctors recommend keeping the tubing in the refrigerator to prevent bacterial growth
- If tubing becomes cloudy can use a 3:1 water/vinegar solution to clean tubing
- Tubing should be changed every week

# Medication Administration

- If the gastrostomy has a side port for medication administration, this port should always be used
- Check with pharmacist on which medications can be crushed to put down the tube (Be careful with capsules - the beads can get stuck in the tube)
- Check with pharmacist or physician on how much water to mix with medications
- Be sure to flush before and after each medication
- Check with pharmacist before mixing medications together
- Article handout

# Other Nursing Considerations

- Mouth care is extremely important in patients not taking in oral nutrition.
  - Brush teeth twice daily as you normally would
  - Keep mouth moist with swabs
  - Can use mouthwash to swish and spit
  - Use lip balm to avoid chapped lips
- Nose may become sore with a naso tube.
  - Wash nostrils when they become crusty and at least once daily
  - Clean and re-tape daily using adhesive remover
  - Use a lip balm around the nostril edges to moisturize

# Problems Associated with Tube Feedings

- Constipation
- Diarrhea
- Nausea
- Dehydration
- Fluid overload
- Aspiration
- Clogged tube
- Leaking at the site
- Site is red/itchy with raised rash.
- Site is irritated/drainage
- Granuloma
- Tube is accidentally removed
- Bleeding/Hematochezia
- Potential developmental delay

# Constipation

## Causes

- Not enough water is being given with feedings
- Not enough or no fiber
- Lack of physical activity
- Medications

## Treatments

- Check with dietician/physician to make sure you are getting enough water and fiber in their diet
- Try to increase physical activity
- Review medication list with physician to see if any medication changes may help

# Diarrhea

## Causes

- Medications
- Formula being fed too fast
- Tube migration into the small intestine/dumping syndrome
- Formula is too cold
- Formula may be spoiled/contaminated by bacteria
- Not enough or no fiber in diet
- Emotional disturbances
- Formula intolerance

## Treatments

- Review medication list with the physician
- Check with the physician to see if rate can be slowed
- Check that the tube has not migrated away from the stomach wall/stabilize the tube
- Remove formula from refrigerator 30min before giving. Warm to room temperature
- Check with physician/dietician to see if formula should be changed
- Relax during feedings

# Nausea

## Causes

- Tube mushroom/balloon has migrated causing a blockage at the stomach
- Feeding is too fast
- Feeding volume too much
- Positioning
- Delayed gastric emptying
- Gastritis
- Constipation
- Exercising right after a feeding
- Formula intolerance

## Treatments

- Ensure proper positioning of the tube
- Decrease the feeding rate
- Decrease the volume by increasing the frequency to keep the total volume the same for the day
- Feed over a longer period-may need to go to continuous feedings
- Vent the tube frequently
- Monitor stool output for frequency and consistency
- Clean equipment well

# Dehydration

## Causes

- Formula too concentrated
- Frequent diarrhea
- Prolonged fever
- Not enough water
- Perspiring heavily
- Wound is draining large amounts of fluid

## Treatments

- Check with your physician regarding formula type and water intake
- Call physician for direction with a child with fever/diarrhea



# Fluid Overload

## Causes

- Too much water before or after the feedings
- Feeding rate is too high
- Fluid volume is too high due to diluted formula

## Treatments

- Check with your physician/dietician about the amount of water you should be taking each day
- Do not dilute formula with more than prescribed amount of water

# Aspiration

## Causes

- Tube migration
- Lying flat during feeding
- Formula back up
- Constipation

## Treatments

- Check the position of the tube
- Be sure to sit up at least 30 degrees with every feeding and 30-60 minutes after
- Monitor bowel movements for frequency and consistency

# Clogged Tube

## Causes

- Clamped tube
- Kink in the tubing or the tube
- Dried formula/medication blocking the tube
- Wrong size of tube

## Treatments

- Check the clamps to make sure all are open
- Use the syringe plunger to give to give a brief pulsing type method
- Instill a small amount of carbonated drink or seltzer water. Clamp the tube for 30 minutes and then flush using the pulsing method
- Flush with water followed by air after each feeding

# Leaking at the Site

## Causes

- Balloon/mushroom has moved away from the stomach wall
- Balloon has lost water
- Stoma has become larger (usually from excessive movement of the tube)
- Increased pressure in the stomach from air, delayed gastric emptying, coughing, constipation
- Tube diameter is too small
- Perpendicular positioning of the tube is not maintained
- Valve is defective

## Treatments

- Gently pull back on the tube to ensure that the balloon/mushroom is up against the stomach wall
- Check the amount of water in balloon at least weekly. It should be 5 ml for most of the balloons
- Stabilize the tube with tape, barrier
- Vent the tube before and after feedings
- Monitor stools
- Maintain the tube in the upright position using tape to secure if necessary
- Change the tube

# Site with drainage and irritation

## Causes

- Leakage of gastric juices from the stoma site/dampness around the tube
- Infection of the site
- Stitches/stay sutures irritated
- Stabilization bar too tight or too loose
- All g tube sites leak

## Treatments

- Keep clean and dry - apply a non adherent dressing around the site
- Can use stoma adhesive powder to the site
- Zinc oxide cream applied to area around the site
- Topical antibiotic ointment
- Antibiotic therapy if needed (very rare)
- Stiches can be removed according to physician recommendation
- Proper adjustment of the stabilization bar – 1/8 inch space between the bar and the skin

# Site itchy with raised rash

## Causes

- Candida skin infection

## Treatments

- Keep skin clean and dry
- Apply antifungal cream or powder three times daily until clear

# Granuloma

## Causes

- Normal response of the body
- Excessive movement of the tube
- May be associate with a small amount of bleeding or a thick yellow-green drainage may occur

## Treatments

- Cauterization with silver nitrate to the area. Excessive use of the silver nitrate can be irritating to the healthy skin. Can develop into scar tissue and require surgical removal
- Stabilize the tube
- Treatment with triamcinolone cream.

# Granulomas



- Prevention
- Stabilizing the tube
- Use soap and water to clean frequently
- Turn frequently
- Antibiotic ointment?
- No Gauze/Gauze



# Stoma Closure

- Accidental removal of the tube
- Prevent accidental removal of the tube by taping and make sure tube is secure.
- Children can place under clothing or use onesies
- Needs to be replaced ASAP usually within 30 minutes to 1 hour before closure of the site
- **DO NOT FORCE THE TUBE IN IF IT HAS BEEN OUT**
- Send to the ER/call physician who placed the tube.

# Bleeding/Hematochezia

## Causes

- Mucosal irritation
- Gastric Ulcers
- Tube changes

## Treatments

- Prevent excessive tension on the tube.
- Acid inhibition usually with H<sub>2</sub> blockers or PPI
- Lubricate the tube well before insertion

# Potential Developmental Delay

## Causes

- Enteral feedings and tubes may affect development of feeding skills and normal development including speech

## Treatments

- Age appropriate activities should be encouraged
- Use a low profile device as soon as possible so it does not get in the way of crawling/lying on belly
- Feeding schedule should be set up so that when we expect feeling of hunger an oral activity is done.(Child will associate feeling of hunger with oral eating)
- Oral aversion - consult occupational/speech therapy
- Encourage use of Early Intervention

# Teaching for Parents

- Know what type and size of tube patient has
- Understand feeding schedules/oral feedings
- Understand how to use equipment
- What and Who to call for problems
- Know name and phone numbers of homecare company, pharmacy, and physicians
- How to mix formula and measure formula
- Signs and symptoms of dehydration
- Teach oral care and dental care
- Skin care
- Tube care
- Teach parents how to include child in family dinner time
- Emotional support

# What's new?

## WHY?

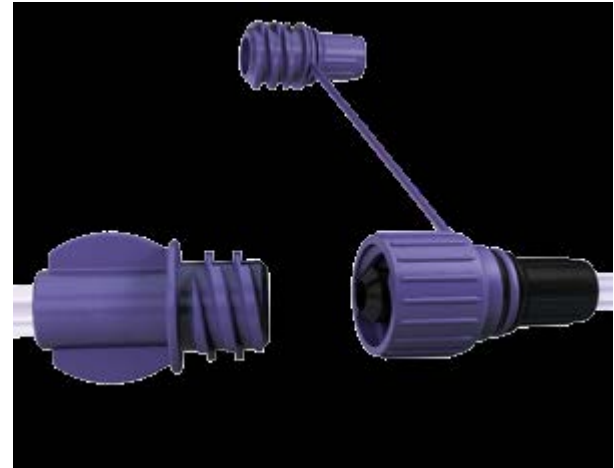
*A 24-year-old woman was 35 weeks pregnant when she was hospitalized for vomiting and dehydration. A bag of ready-to-hang enteral feeding was brought to the floor, and the nurse, assuming it was total parenteral nutrition, which the woman had received on previous admissions, pulled regular intravenous tubing from floor stock, spiked the bag, and started the infusion of tube feeding through the patient's peripherally inserted central catheter line. The fetus died—and then the mother, after several hours of excruciating pain.\**

## WHAT CONTRIBUTED TO THE PROBLEM?

Connectors fit multiple lines  
1 or 2 part system for enteral feedings  
Use of stop cocks for med administration  
Use of syringe pumps in peds  
3 in 1 parental can look like enteral formula  
Inattention  
Poor lighting  
Poor labeling

# Enfit connectors

- In transition
- Mandated start in 2015, delay
- Do not over tighten
- Complete system



# Other safety procedures

- On report both nurses follow the lines back.
- Color Labeling of lines.
- Parental lines draped to the head of the patient
- Enteral lines draped to the foot of the patient
- Use good lighting in the room
- Proper labeling of solutions with warning for enteral solutions
- Do not use stop cocks for medication administration
- Use of only 1 extension



# Case Study #1

Mom calls home care nurse at 1000 am. She was going to start the enteral feeds and noticed there was formula all over the bed.

Mom pulls back the sheets and there seems to be most of the formula in the bed from his overnight feeding. Patient is awake, appears his normal self.

The abdomen is soft, there is serousanguinous drainage noted, gtube is pulled out with the balloon intact and laying in the bed.

Mom should attempt reinsertion of the g tube with replacement.  
Mom hangs up and reinserts the gtube.

Mom calls back within the hour after she has started the enteral feedings. Patient is screaming in pain.





# Case Study # 2

- Patient's parent calls with concern for infection at the g tube site.
- Patient's assessment vital signs are stable, abdomen is soft, bowel sounds are present, yellowish drainage noted on the 2x2. uncomfortable at the site. Small red swelling noted at the site.

# References

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