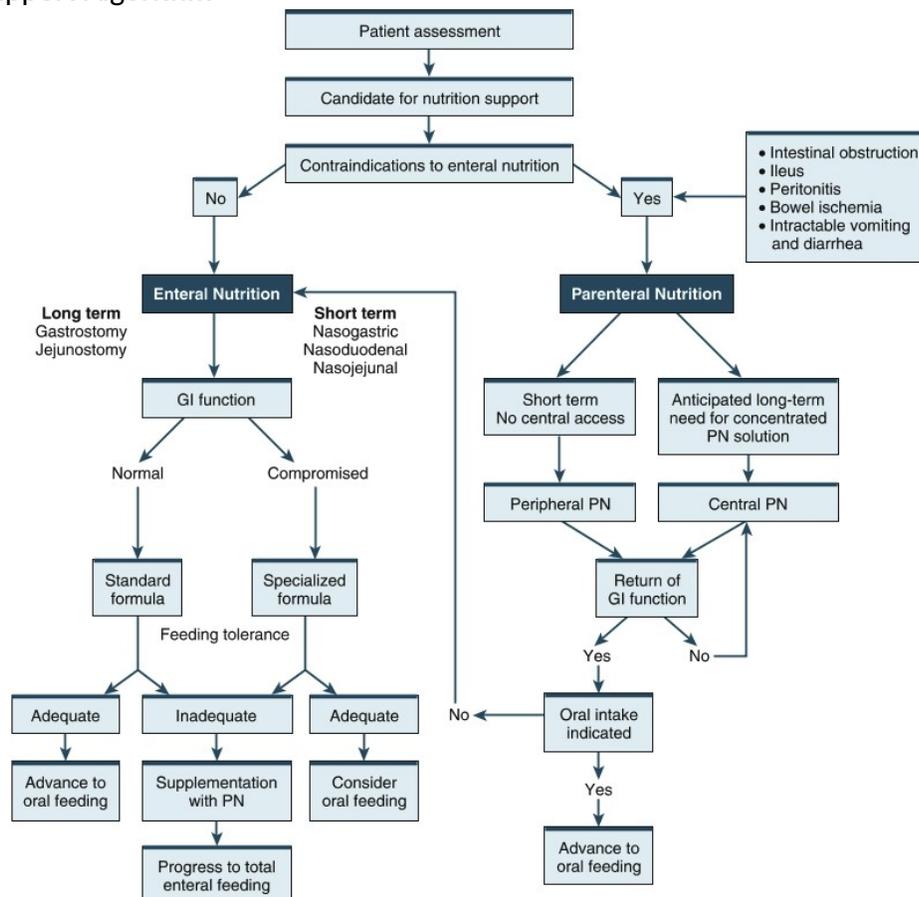


# ENTERAL NUTRITION

2022

- Also known as tube feeding
- Administration of nutritionally balance liquefied food or formula through tube inserted into:
  - Stomach
  - Duodenum
  - Jejunum
- Indications include those with:
  - Anorexia
  - Orofacial fractures
  - Head/neck cancer
  - Neurologic or psychiatric conditions
  - Extensive burns
  - Critical illness
  - Chemotherapy
  - Radiation therapy

## Nutritional Support Algorithm



(Adapted from Ukkela A, Freeman KL, Gilbert K. ASPEN Board of Directors: Standards for nutrition support: Adult hospitalized patients. Nutr Clin Pract 25:403, 2010.)

- Enteral Nutrition
- Provides nutrients alone or supplement to oral or parenteral nutrition
- Easily administered
- Safer than parenteral
- More physiologically efficient than parenteral
- Less expensive than parenteral

- Variety of formulas
  - Special formulas for patients with
  - Concentrations from 1 to 2 cal/mL
  - Osmolarity, amount of protein, sodium, and fat vary
- Delivery options include:
  - 
  - 
  -
- Polyurethane or silicone tube
  - Soft and flexible
  - Radiopaque
  - Placement in small intestine
  - Stylet may be used for placement
  - Decreased likelihood of regurgitation and aspiration when placed in intestine

#### Enteral Nutrition

- Nasogastric and naso-intestinal tubes
  - Can clog easily
  - Can be dislodged by vomiting or coughing
  - Can be knotted / kinked in GI tract
- Gastrostomy and jejunostomy tubes
  - May be used when a patient requires tube feedings for an extended time
  - Patient must have intact, unobstructed GI tract
  - Can be placed surgically, radiologically, or endoscopically

#### Percutaneous Endoscopic Gastrostomy

- Percutaneous endoscopic gastrostomy (PEG) placement requires esophageal lumen wide enough for endoscope to pass
- PEG and radiologically placed gastrostomy
  - Fewer risks than surgical placement, lower cost, minimum sedation
- Gastrostomy tube placement via percutaneous endoscopy
- Using endoscopy, a gastrostomy tube is inserted through esophagus into stomach and then is pulled through a stab wound made in abdominal wall

#### Enteral Nutrition

- Feedings can be started when bowel sounds are present, usually 24 hours after placement of a surgically placed g-tube or j-tube
- Most PEG tube feedings can start within 4 hours of insertion
- Tube feeding administration
  - Aspiration risk
    - Ensure tube is in the right position
    - Maintain head-of-bed elevated
    - Follow agency policy regarding checking gastric residual volume
  - Patient position
    - Patient should be sitting or lying with HOB at 30 to 45 degrees
    - HOB remains elevated for 30 to 60 minutes for intermittent delivery
  - Proton pump inhibitors may be ordered
- Tube position

- X-ray confirmation for new nasal or orogastric tubes
- Mark exit site of tube
- Check placement before each feeding/drug administration or every 8 hours with continuous feeds
- Check insertion length regularly
- Methods used to check placement
  - Aspiration of stomach contents
  - pH check
- Confirm placement with more than one test
- Most accurate assessment: x-ray visualization
  
- Site care
  - Assess the skin around tube daily
  - Monitor bumper tension
  - Apply a dressing until site is healed
  - After healed, wash with soap and water
  - Protective ointment or skin barrier
- Tube feeding administration
  - Tube patency
    - Flush feeding tube with 30 mL warm water for continuous tube feeding
    - Flush with water before/after each bolus feeding and drug administration
    - Continuous feedings administered on feeding pump with occlusion alarm
- Misconnection
  - Inadvertent connection between an enteral feeding system and a non-enteral feeding system
    - IV line, peritoneal dialysis catheter, tracheostomy tube cuff
  - Severe patient injury or death can result

#### General nursing considerations

- Daily weights
- Assess for bowel sounds before feedings
- Accurate I&O
- Initial glucose checks
- Label with date and time started
- Pump tubing changed q24h

#### Complications

- Vomiting
- Dehydration
- More calorically dense, less water formula contained
- Check for high protein content
- Diarrhea
- Constipation
- Gastrostomy or jejunostomy feedings
- Two potential problems
  - Skin irritation
    - Skin assessment and care
  - Pulling out of tube
    - Teach patient/family about feeding administration, tube care, and complications

## Gerontologic Considerations

- More vulnerable to complications
  - Fluid and electrolyte balances
  - Glucose intolerance
  - Decreased ability to handle large volumes
  - Increased risk of aspiration

## Parenteral nutrition (PN)

- Administration of nutrients directly into the bloodstream
- Goal: Meet nutritional needs and allow growth of new body tissue
- Customized to meet each patient's needs
- Utilized when GI tract is not appropriate to be fed through
- Common indications for parenteral nutrition
  - Chronic severe diarrhea and vomiting
  - Complicated surgery or trauma
  - GI obstruction
  - GI tract anomalies and fistulae
  - Intractable diarrhea
  - Severe anorexia nervosa
  - Severe malabsorption
  - Short bowel syndrome
- Composition
  - Base solutions contain dextrose and protein in the form of amino acids
  - Prescribed electrolytes, vitamins, and trace elements are added to customize
  - IV fat emulsion is added to complete the nutrients

## Methods of administration

- Central parenteral nutrition is used for long-term support
- Peripheral parenteral nutrition is used for short-term therapy or special conditions

## Complications of PN

- Refeeding syndrome
  - Fluid retention and electrolyte imbalances
  - Hypophosphatemia is hallmark
  - Patients predisposed by long-standing malnutrition states
- Metabolic problems
  - Altered renal function
  - Essential fatty acid deficiency
  - Hyperglycemia, hypoglycemia
  - Hyperlipidemia
  - Liver dysfunction
- Catheter-related problems
  - Air embolus
  - Catheter-related sepsis
  - Dislodgement, thrombosis of vein, phlebitis

## Home nutrition support

- Teach the patient and caregiver

- o Catheter or tube care
  - o Mixing and handling of solutions and tubing
  - o Side effects and complications
- Discharge planning needed