

# Chapter 27 Nutritional Therapy and Assisted Feeding

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# Goals of Nutritional Therapy

## Goals of nutritional therapy



Treat & manage  
disease



Prevent complications



Restore/maintain  
health

# Nutritional Therapy

- Diets are prescribed by Provider
- Some patients may need assistance with feeding

## Patients Needing Feeding Assistance

- ▀ Paralysis of the arms
- ▀ Problems breathing or swallowing (dysphagia)
  - ▀ Population at risk for aspiration oral intake
  - ▀ Thicken liquids/change in food texture
- ▀ Visual impairment
- ▀ Intravenous lines or devices in their hands or arms
- ▀ Severely impaired or weak patients
- ▀ Confused patients



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# Postoperative Patient and Nutrition

- Well-nourished preoperatively- facilitates healing and recovery
- Preop patients- NPO before the procedure
  - Decreases risk of aspiration of stomach contents during procedure
- Postop-progress
  - Clear liquid
  - Full liquid diet
  - Soft diet
  - Regular diet



# Postoperative Patient Diets

- Clear liquids-
  - Started when bowel sounds return
  - Bowel sounds- auscultation
- Goal is to have low-residue, easily digested foods
  - Liquid diet decreases risk of
    - Abdominal discomfort
    - Nausea/vomiting
- Encourage Ice chips 4 hours before first meal





## Clear Liquid Diet

- Short term-deficient in nutrients
- Grape, apple, cranberry juices
- Strained fruit juices
- Vegetable broth
- Carbonated water
- Clear, fruit-flavored drinks
- Tea, coffee
- Gelatin and ices
- Popsicles
- Clear broth



## Full Liquid Diet

- Step between clear liquid and soft diet
- Longer term than Clear Liquid
  - Proteins, nutrients, vitamins and minerals
  - Still low of iron, vitamins A, B12, thiamine
- Used following surgery, difficulty swallowing or chewing
- Milk and milk beverages
- Yogurt, eggnog, pudding
- Custard and ice cream
- Puréed meat, vegetables in cream soups
- Vegetable juices
- Sweetened plain gelatin





## Soft Diet

- Recovering from surgical procedures involving stomach or bowel
- Low in fiber
- Foods are softened by cooking, mashing, chopping
- Eggs
- Breads without seeds
- Boiled potatoes
- Soups
- Fruit
- Juices
- Tender meats

## Health Issues Related to Nutrition

## Anorexia Nervosa

### Disorder characterized by

- Restriction of caloric intake
- Fear of becoming fat
- Severe disturbance in body image
- View themselves as fat-underweight

May refuse to eat despite being extremely underweight

If not corrected, may be fatal

### Treatment is:

- Nutritional intervention
- Behavioral modification
- Psychological counseling

## Bulimia

### Eating disorder characterized by

- Episodic binge eating
- Followed by behaviors to prevent weight gain-purging, fasting, using laxatives

Aware of their behavior and often feel ashamed

Esophageal and peptic ulcers, depressed gag reflex, dental issues

- Gastric acid during induced vomiting

### Treatment is:

- Nutritional counseling
- Psychological counseling

# Obesity

**Excessive accumulation of fat**

93.3 million adult Americans are obese

## Contributing factors

- Genetics
- Poor eating habits
- Medications
- Age
- Gender

## Obesity-risk for chronic diseases

- Cardiovascular
- Stroke
- Diabetes
- Joint disease
- Gallbladder

Must expend more energy than is consumed through intake of calories

Long term weight management success rates are low



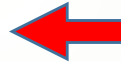
# Pregnancy

- Nutritional status before and during pregnancy can influence health status of mother and fetus
- Nutritional counseling-important to reduce risk of low-birth weight infants, gestational diabetes, pregnancy induced hypertension
- Emphasize management of maternal weight gain and taking prenatal vitamins



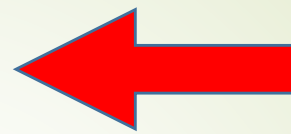
# Substance Abuse

- Interferes with food intake by
  - Decreasing appetite
  - Decreasing financial resources for food
  - Replacing substance for food
- May lead to impaired absorption of nutrients
- Thiamine (Vitamin B1) deficiency is seen in alcohol abuse
- **Treatment**
  - Fluid and electrolyte supplements
  - Vitamin and mineral supplements (particularly thiamine)
  - High-calorie, high-carbohydrate diet
  - Dietary fat restriction if liver function impaired

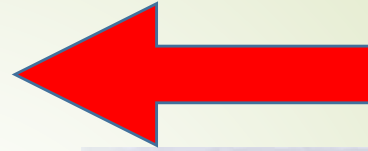


## Substance Abuse-Thiamine (Vitamin B1) Deficiency

- Assists in generation of energy
- Role in developing nerve impulses
- Helps with myelin sheath maintenance
- Affects the cardiovascular, nervous, and immune systems



# Substance Abuse-Thiamine (Vitamin B1) Deficiency



- Initial symptoms include
  - Anorexia, irritability, short-term memory
- Prolonged symptoms include
  - Loss of sensation in the extremities
  - Symptoms of heart failure
    - Swelling of the hands or feet, chest pain related to demand ischemia, or feelings of vertigo, double vision, and memory loss
  - Close friends and family - describe confusion or symptoms of confabulation



## Disease Processes That Benefit From Nutritional Therapy

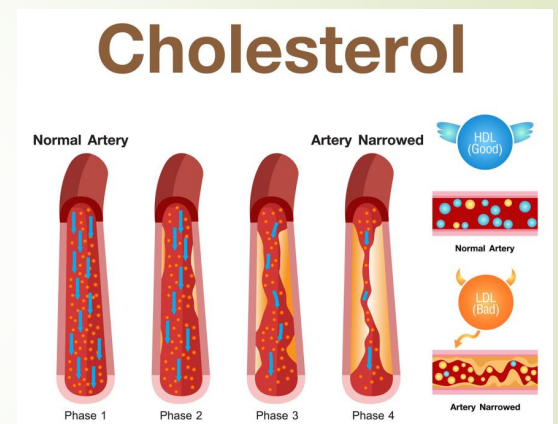
# Cardiovascular Disease

- Includes diseases of
  - Blood vessels
  - Hypertension
  - Myocardial infarction
  - Congestive heart failure
- Atherosclerosis (accumulation of fatty deposits on blood vessel walls) prevention
- Focused on reduction of
  - Fats
  - Sodium
  - Cholesterol



## Cardiovascular Disease-Cholesterol 3 Types

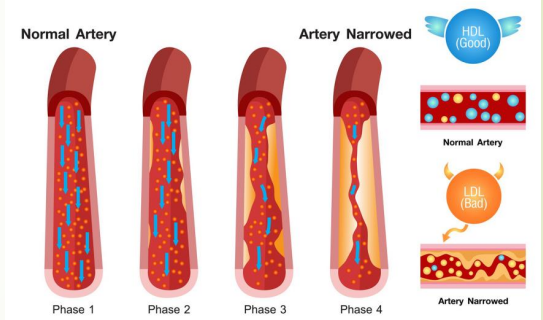
- High-density lipoprotein (HDL)**
  - "good cholesterol"
  - Cleanse vessel of fatty deposits
- Low-density lipoprotein (LDL)**
  - Increases fatty deposits on vessel walls
- Very-low-density lipoprotein (VLDL)**
  - Carrier for triglycerides in blood
  - Type of fat linked to atherosclerosis and coronary artery disease



## Cardiovascular Disease-Trans-Fats

- Trans-fats
  - Increases levels of triglycerides
  - Risk for diabetes
- Chips, fast foods usually high levels of trans fats
- Low fat dairy vegetable oils, poultry, fish lowers cholesterol levels
- Vitamin D may help prevent cardiovascular disease
  - Decreasing inflammation

## Cholesterol



## Cardiovascular Disease-Sodium

- Causes fluid retention
- Increased fluid with heart failure increases workload of heart
  - Increases respiratory distress and edema
  - Leads hypertension
- Diets low sodium and high fruits can lower blood pressure
- No added salt or sodium striction diets
- Salt substitutes and no salt seasoning may be used in cooking





# Diabetes Mellitus

- Disturbance of the metabolism of carbohydrates and the use of glucose by the body
- **Two main types**
  - Type 1: insulin dependent
  - Type 2: non-insulin dependent
- High risk populations:
  - American Indians
  - Native Hawaiians
  - Pacific Islanders
  - African Americans
  - Mexican Americans
  - Asian American



# Diabetes Mellitus

- Goal-
  - Maintain serum glucose at 70-120 mg/dL
- Diet of moderate complex carbohydrates
  - Pasta
  - Beans
  - Whole grains
  - Rice
  - Fruit
- Distribute carbohydrates throughout data
  - Avoid large amounts of carbohydrates in one meal
- Encourage monitoring blood glucose
  - Blood glucose level 180 mg/dL or below
    - Usually indicates acceptable post-meal levels



# HIV/AIDS

- HIV Wasting Syndrome
  - 10% of body weight associated with diarrhea and fever
  - Muscle wasting- due to treatment, infections, loss of appetite, GI disorders
- Therapy:
  - Replacement of fluids and electrolytes
    - Vitamins and minerals-Vitamin D
  - Weight gain
    - Increase calorie intake
    - Soft food when mouth is painful from lesions
    - Small frequent meals
  - Replacement of lost muscle mass
    - Protein intake
  - Maintaining the immune system



## Assisted Feeding

# What is Assisted Feeding?

## Ways to Feed People Who...

- Suffer from dysphagia (difficulty swallowing)
- Need more calories than they can consume orally
- Need to bypass the mouth for feeding
  - Directly into the stomach/intestine

# Dysphagia

## Signs of difficult swallowing

- Coughing when drinking
- Drooling
- Having food remain mouth

Many who aspirate show no obvious signs or symptoms

Aspiration may change voice or feeling food being stuck in throat

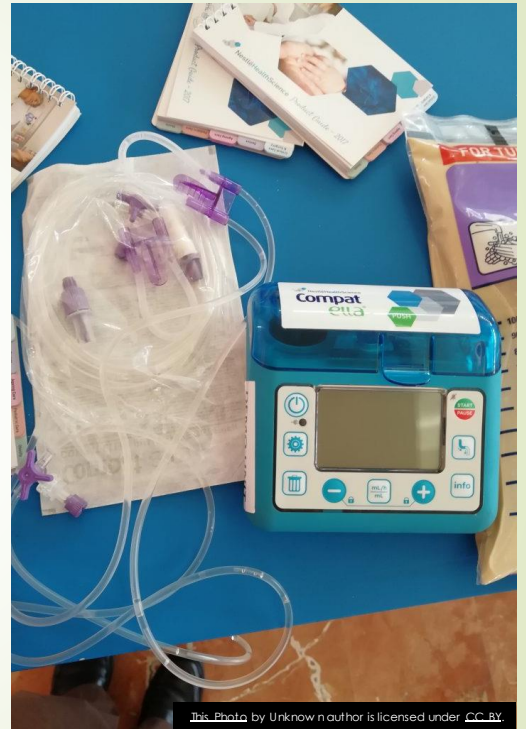
Liquids can be thickened to prevent aspiration

## Solids-4 Textures

- Pureed (pudding texture)
- Mechanically altered (moist minced)
- Advanced (moist bite size)
- Regular (all foods)

## Two Types of Assisted Feeding

- ENTERAL
  - Providing nutrition directly into the digestive tract
- PARENTERAL
  - Providing nutrition through a vein



## Nasogastric and Enteral Tubes



# Types of Enteral Feeding Tubes

## ■ Nasogastric Tube

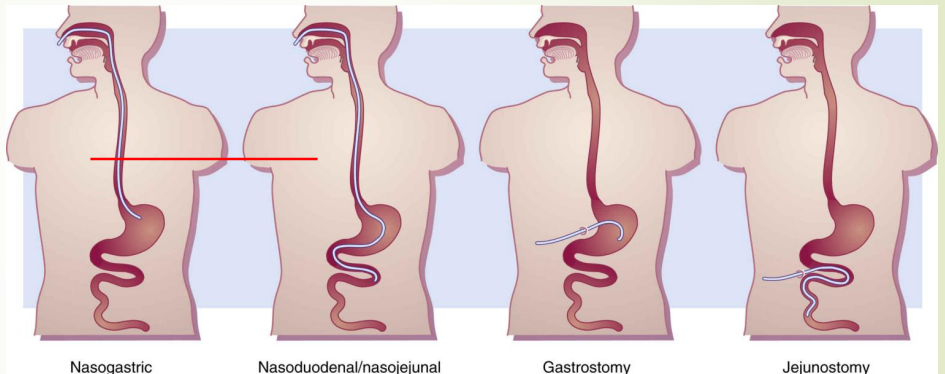
- Placed through the nose into the stomach

## ■ Gastrostomy or Percutaneous Endoscopic Gastrostomy Tube (PEG)

- Placed directly into the stomach

## ■ Jejunostomy or Duodenal Tube

- Place directed into the intestine



weighted to make it to jejunom

## Nasogastric & Enteral Tubes- Reasons for Use

Decompression of the stomach before or after surgery

Obtaining gastric specimens for analysis

Gastric feeding or lavage

Administration of medications

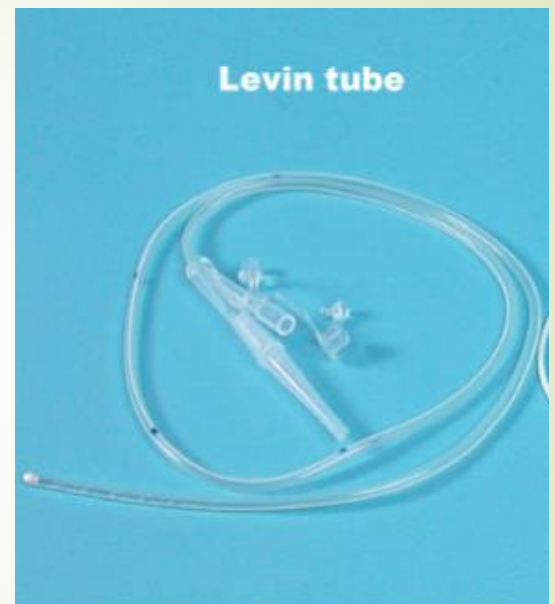
## Nursing Care-NG Tube

- Insertion
- Maintain Patency
  - Irrigate to ensure patent
  - 30-60 ml sterile water
- Checking for Placement
  - Prior to feeding or administering medications
  - At least every shift
  - Decreased LOC or decreased gag reflex
    - May not exhibit symptoms if tube is displaced into respiratory tract
- Check for residual volume
- Monitor for complications
- Removal of tube



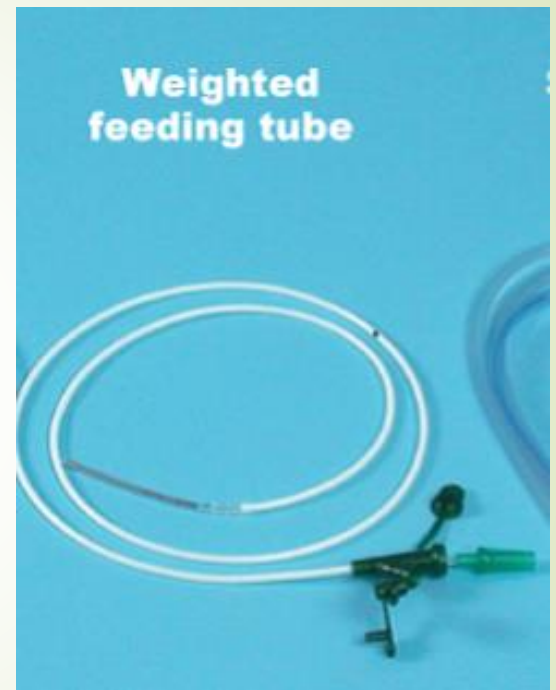
## Nasogastric Tubes-Levin Catheter

- Single lumen, small-bore NG tube
- Serves to administer medication or nutrition
- Decreases the irritation of nose and throat because it is soft and small



# Nasogastric Tubes- Weighted Feeding Tube

- Tube's end is weighted and so it can be advance with peristalsis into the small intestine
- Because its flexibility makes insertion difficult
  - Tube comes in with a firm stylet threaded through its lumen to facilitate insertion
  - Final position is verified via X-ray with the stylet in place.
- Tube is suitable for alimentary (nutritional) feeding
  - The instillation of a liquid diet composed of substances than can be directly absorbed without digestion



# Nasogastric Tubes-Salem Sump Tube

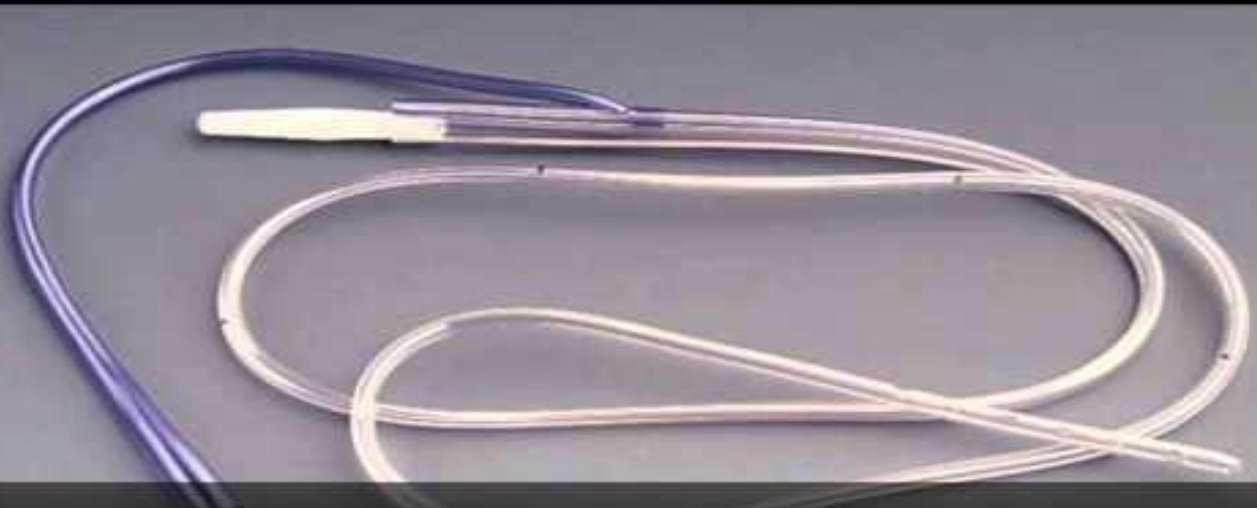
- Large bore NG tube with a double lumen
  - One end for suction
    - Facilitating "Sump"-draining fluid
  - One end open to air
    - Allowing equalization of pressure
- Salem Sump catheter is too rigid for long-term use as a feeding tube
- Using a Salem sump
  - keep blue pigtail above the level of the fluid in the patient's stomach.
  - If not, the stomach contents can backflow through the vent lumen
  - When ambulating:
    - The blue pigtail fits into the end of the suction lumen. A leak-free, closed-loop is created.



Start @ 2:52



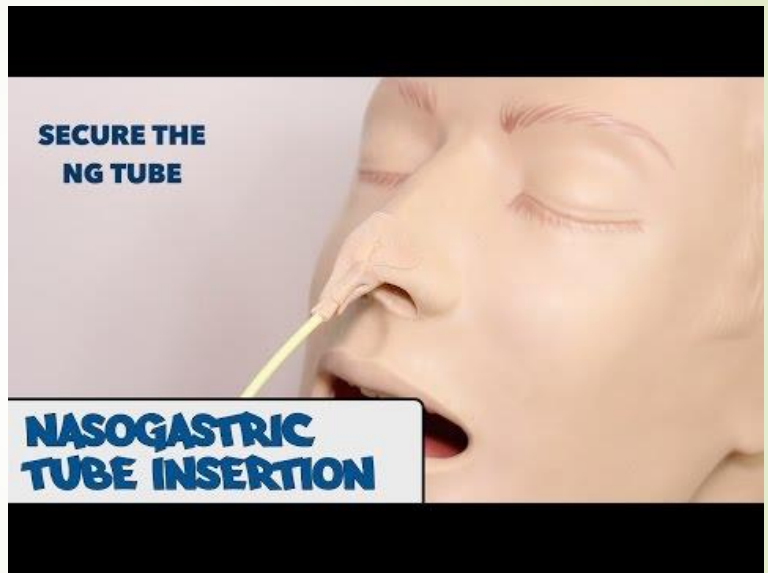
<https://www.youtube.com/watch?v=bdSbeDhHpmQ>



PRIMARY USE IS FOR SUCTIONING



# NG Tube Insertion



# NG Tube Insertion



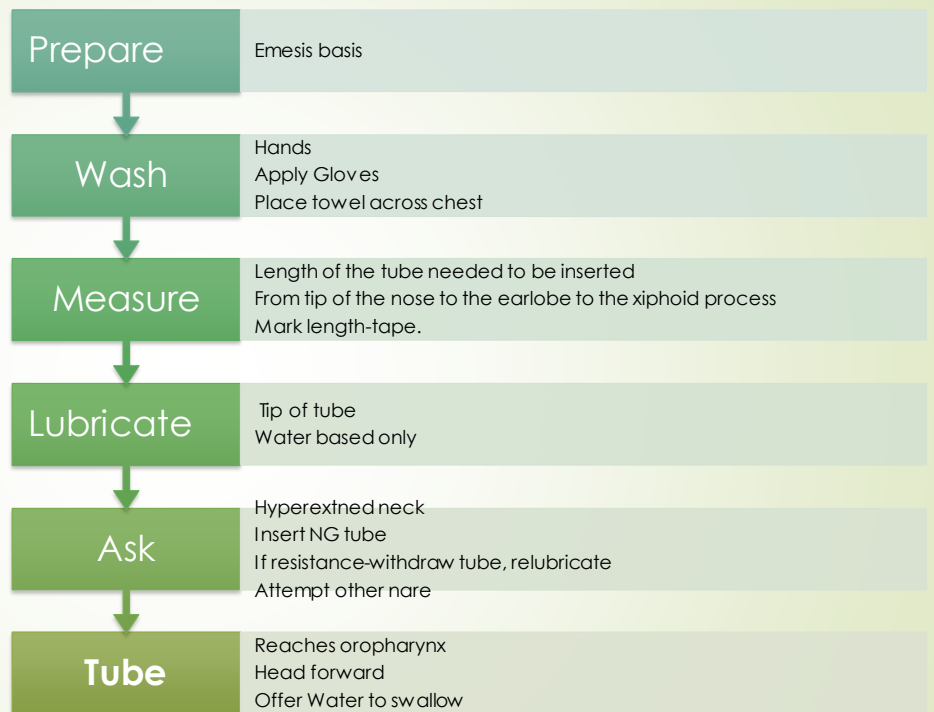


## Placing a NG Tube

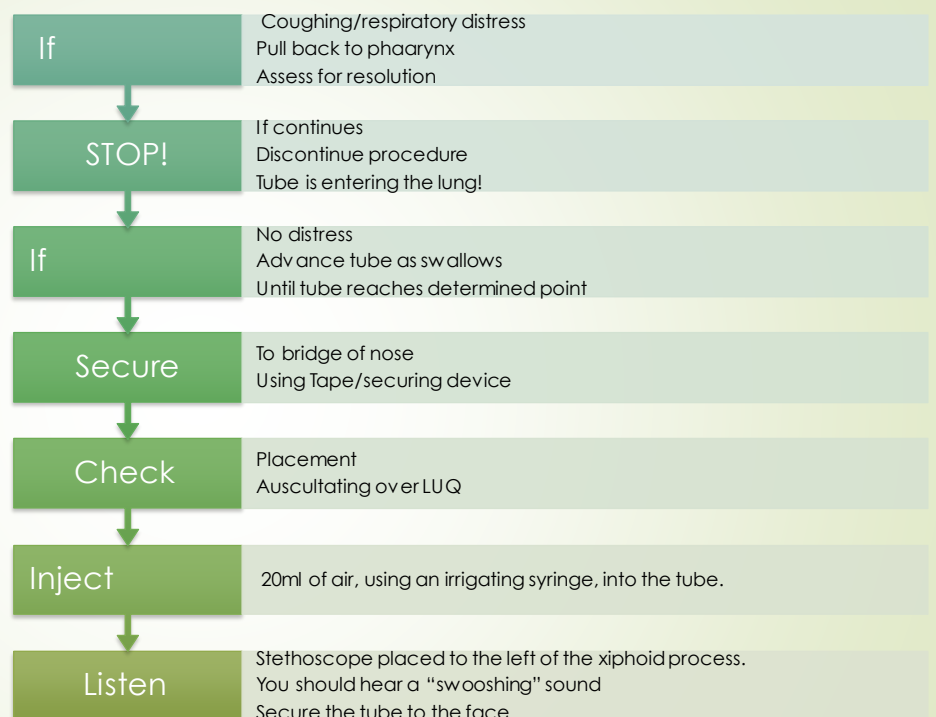
### Insertion of a NG Tube



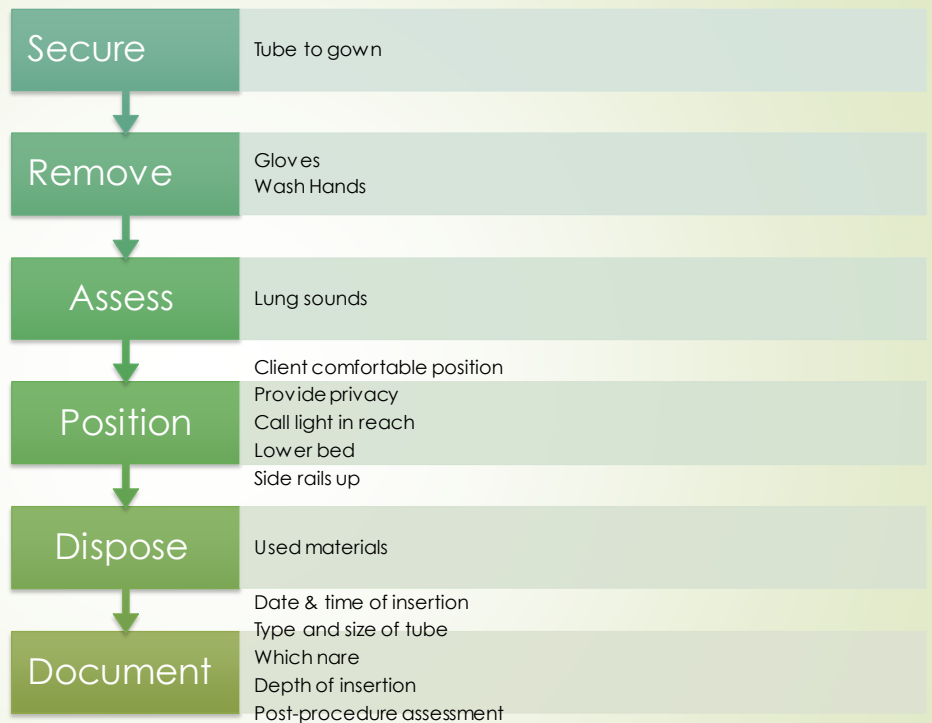
## Insertion of a NG Tube Con't



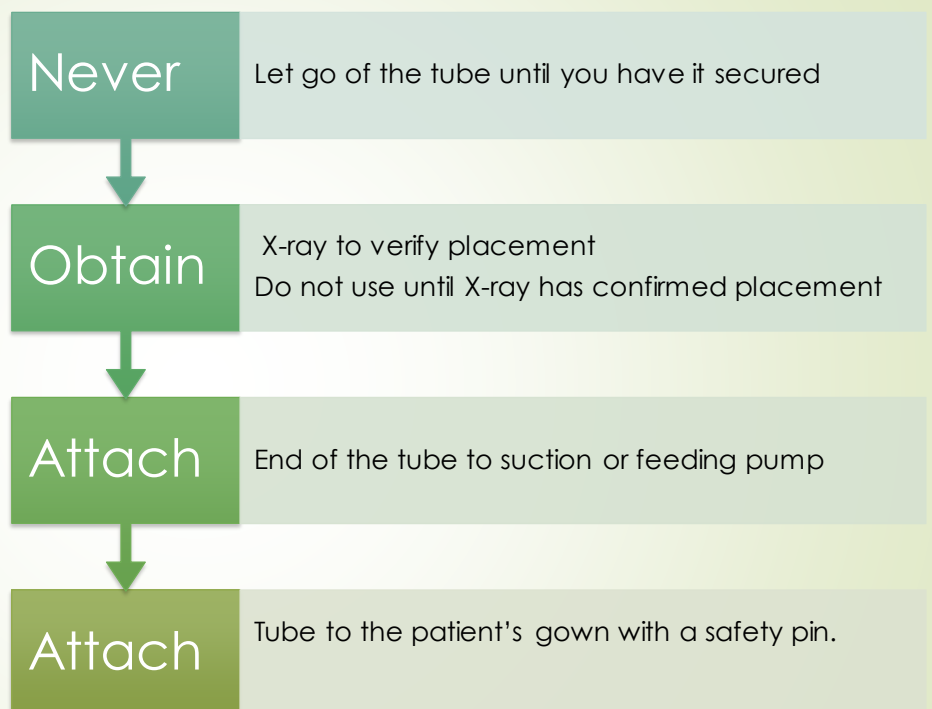
## Insertion of a NG Tube Con't



## Insertion of a NG Tube Con't



## Insertion of a NG Tube Con't







## When a NGT Enters the Lungs

- Signs and Symptoms
  - Cyanotic
  - Unable to make a verbal sound
  - Coughing spasmodically and uncontrollably
- **Remove tube immediately!**



# Maintaining Patency of Tube-Irrigation

- Check Provider order
- Assess secretions and bowel sounds
- Position HOB 30-90 degrees (semi-fowlers or higher)
- Wash hands and put on gloves
- Verify proper tube placement
- Fill the syringe with the correct amount and solution
  - 30 ml normal Saline or sterile water
- Disconnect NGT from tube feed or suction
- Attach the syringe to the end of the tube and instill the solution
  - Attach tube back to suction or tube feed
- Remove gloves, wash hands.
- Document, adding amount of fluid to Intake

## Irrigating NG Tube



# Gastric Decompression

- Reduce the pressure within the stomach by emptying the stomach contents
- Monitor drainage for amount, color, and consistency



## Removal NG Tube

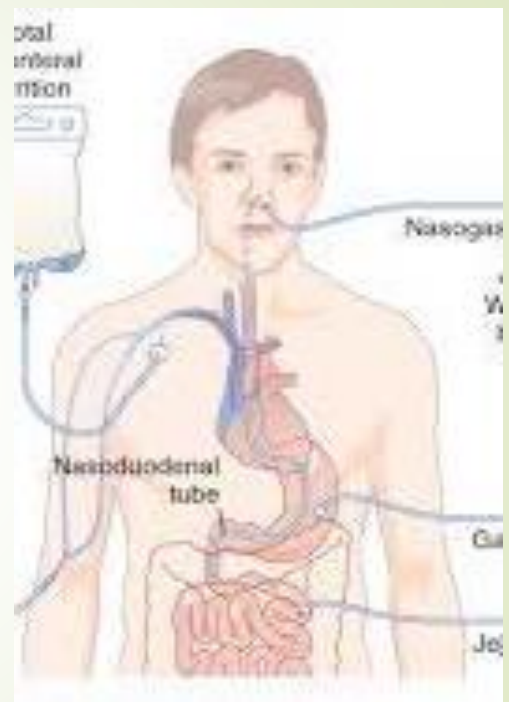


## NGT Removal

Verify order
Assess secretions
Explain procedure
HOB 30 degrees
Wash hands
Put on gloves
Turn off suction/feed
Inject 20ml of water...followed by 20ml of air
Pinch off tube
Remove tape
Have patient hold his breath
Pull out tube quickly/gently
Mouth/nose care
Remove gloves/hand hygiene.
Document time removed, gastric drainage, toleration of procedure
Assess every 3 hours for nausea/vomiting, abdominal distention, bowel sounds

## Enteral Nutrition

- Feeding a patient through the gut- bypassing mouth and esophagus
- May replace all oral intake
- Can be used as a supplement to oral intake
- Type of nutrition determined by
  - Medical condition
  - Stability of the patient
  - Current nutritional status and requirements





## Nasogastric (NG) Tubes vs Nasointestinal (NI) Tubes

NG Tube via  
nose to  
stomach

NI tube via  
nose to  
intestine

## Types of Feeding Tubes

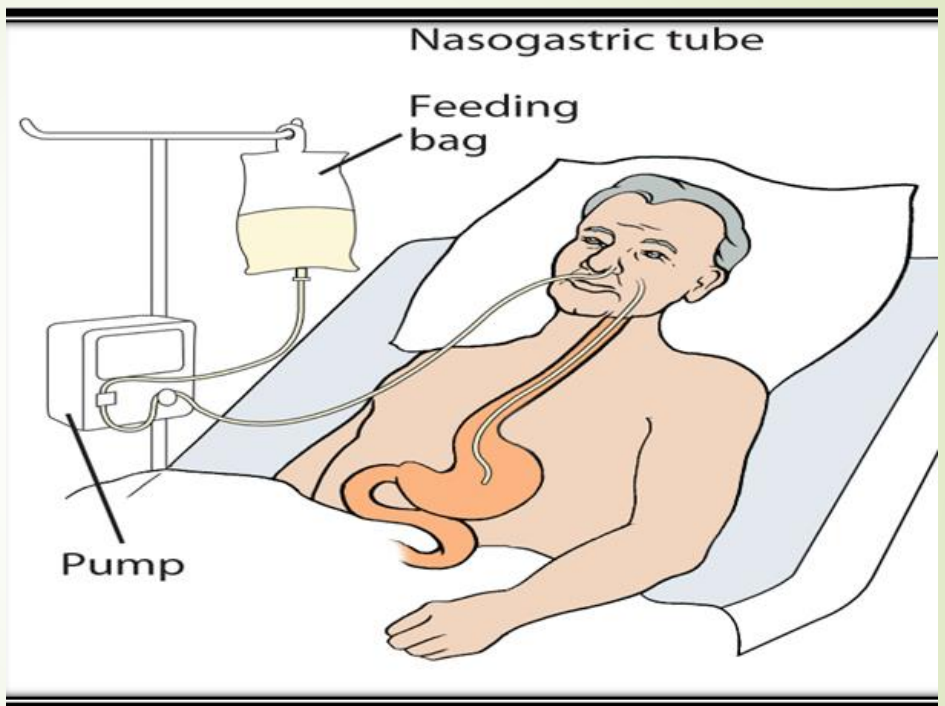
Short  
Term Use

Nasogastric Tube (NGT)  
Nasointestinal (NGI)-Dobhoff

Long  
term Use

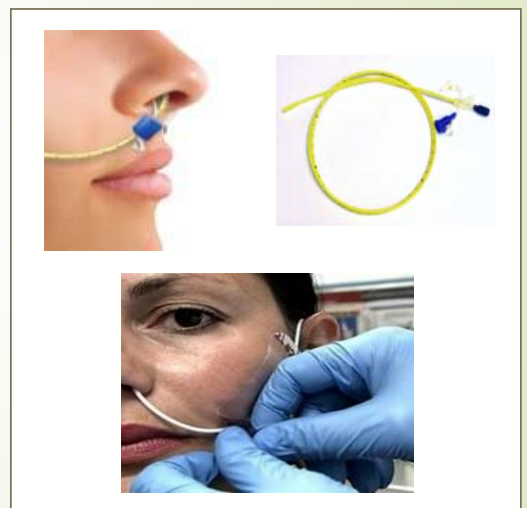
Percutaneous Endoscopic Gastrostomy (PEG)  
Jejunostomy (J Tube)

## Nasogastric tube



## Nasointestinal Tube-Dobhoff

- Weighted, small bore feeding tubes
- Only used for tube feed and medication administration-cannot take suctioning
- Inserted using a guidewire or stylet
- Placement must be verified by X-ray prior to removal of the guide wire



## Percutaneous Endoscopic Gastrostomy (PEG) or Jejunostomy Tubes (J-Tube)

Used for nutritional support

Placement should be checked

- Every shift
- Before feeding
- Before administering medication

Residual fluid in stomach should be assessed

- Before feeding
- Before administering medications

Always reinsert aspirated content

- If residual is greater than  $\frac{1}{2}$  of the volume given at the last feed....hold the feeding

Keep HOB elevated

- At least 30 degrees if on continuous feeding

## Percutaneous Endoscopic Gastrostomy (PEG) Tube

► **Placed into the stomach**

► For **long term** nutritional support- longer than 6 weeks

► **Measure tube length** from skin level to end of placement adapter for **possible dislodgement**

- Compare previous measurements
- Higher measurements indicate tube migrated or dislodged
  - Notify Charge Nurse and Provider

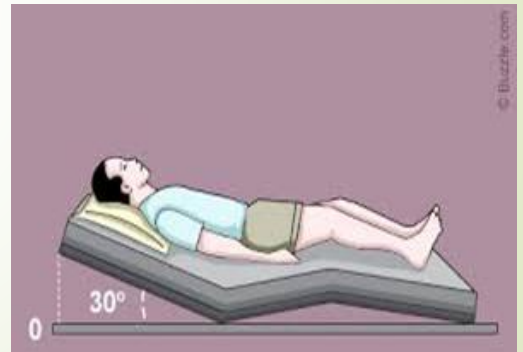
► **Benefits of PEG tube**

- Patient can administer their own feeding
- Concealed
- Easily removed



# Nursing Care of A PEG Insertion Site

- **Inspect skin around insertion site daily**
  - Monitor for irritation, infection
- **Clean with soap and water, then dry, daily**
  - Rotate external disk to prevent sticking to skin
- **Monitor for dislodged, abdominal distention, aspiration, pain, vomiting, respiratory distress**
  - If occurs-notify Provider immediately
- **Assessing correct placement every shift**
  - Before feeding or admin. medications
    - Measure amount of residual fluid
    - If residual is greater than 500 ml replace withdrawn fluids, document, notify RN or Provider
    - Delay further feeding
    - Keep HOB 30 degrees
- Cover with drain gauze, if needed



## Methods of Feedings

- Continuous
- Intermittent (also called Bolus)





## Enteral Tube Feeding Details

- Providing nutrition directly into the digestive tract
- The type and amount formula prescribed by Provider
  - Usually range from 240-360 ml per feeding
  - Daily amount of 2000 ml if efficient



## Feeding Pumps

- **Continuous feeding**
  - Effective for patients who cannot tolerate large amounts of fluids at one time
- **Intermittent feeding**
  - Beneficial for patients able to feed themselves
  - Beginning to reintroduce oral feeding
  - Resembles regular mealtimes
  - Stimulates the feeling of hunger

## Intermittent Tube Feedings

Check physician order for type & method of formula

Assess-distention/tenderness

Elevate HOB 30-90 Degrees

- Maintain HOB for 30-60 minutes after procedure
- Facilitates stomach emptying, prevents aspiration, and reflux

Wash hands/gloves

Assess for correct tube placement, residual

- If residual is greater than  $\frac{1}{2}$  of the volume given at the last feed...hold the feeding

## Intermittent Tube Feedings

Use a large syringe (30ml) attach to feeding tube

- Pull formula into syringe and allow it to flow by gravity
- **Formula infused over 10 minutes or longer**
- Regulate the infusion rate by raising and lowering the syringe
- Add formula to the syringe to keep the neck of the syringe filled
  - Keeps air from entering stomach

Using Gavage Bag:

- Regulate the drip factor for the formula to run in over the desired amount of time

Flush with 30-60ml of sterile water after feeding



## Continuous Feeding

- Patients who cannot tolerate a large amount of fluid at once
- Infused via a feeding pump
- Check order for type and amount of formula
- Wash hands, put on gloves
- Assess for correct tube placement or residual before feeding
- **Keep HOB 30 Degree or higher-**
  - **Prevents reflux, facilitates stomach emptying, and helps prevent aspiration**



## Complications with Tube Feed

Not tolerating feeding

Nausea/diarrhea

Clogged feeding tubes

Aspiration of formula

Hyperglycemia

Fluid overload

Dehydration



## Stop Tube Feeds if the Patient is Not Tolerating It!

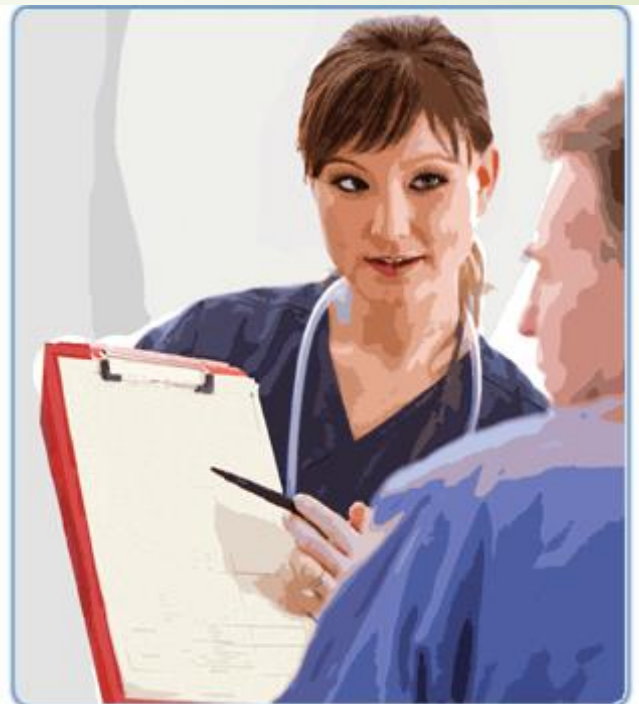
### Indications the patient is not tolerating tube feeds:

- Abdomen distention
- Increased residual
- Nausea/Vomiting
- Diarrhea
- Abdomen pain



## Documentation of tube feeding

- Type of formula given
- Amount
- Verification of tube placement
- Amount of residual obtained
- Any signs of intolerance to feeding





# Parenteral Nutrition

Administered into the blood stream

Used for people who do not have a functioning GI tract

Can provide all the nutrition a person needs

## TPN & PPN

- High concentration of calories, carbohydrates, vitamins, minerals, electrolytes, lipids
- **Infused very slowly at first**
  - Body can adjust to the high level of glucose in the solution
- **Do not increase the infusion rate of the solution too quickly**
  - It can be harmful to the patient and lead to coma or death.
- **Must also be weaned slowly before stopping TPN**



## Total Parental Nutrition (TPN)

- Delivers total nutrition through intravenous **central line**
  - Subclavian vein, port, jugular, PICC
- Used for **long term therapy**
  - Unable to tolerate feedings through the gut
  - Unable to maintain adequate calories



## Total Parental Nutrition (TPN)

- Examples:
  - Burn patients
  - Intestinal obstruction
  - Inflammatory bowel disease
  - AIDS
  - Cancer patients
- Can be used in addition to tube or oral feedings.



## Peripheral Parenteral Nutrition (PPN)

- ▶ Have some oral intake but not enough calories
- ▶ Administered through a **peripheral IV site**
- ▶ Used for a **very short amount of time**
- ▶ **Monitor infusions closely and NEVER attempt to catch up if the rate has been slowed**



## Monitor Parenteral Nutrition

IV site every 4 hours

VS-every 4-8 hours

Flow rate of pump-  
every 4 hours

Patient  
response/tolerance  
every shift

Intake and output-  
every shift

Blood glucose 6-8  
hours

Weigh daily or  
weekly

Lab work daily

Nutritional status-  
continuous



## Complications with Parenteral Nutrition

Infection can occur at the site of the central intravenous line

- Leads to sepsis
- Bacterial and fungal infections can develop in the solution if it is left unrefrigerated for over 24 hours

All bags must be changed every 24 hours



## Nursing Diagnosis related to Tube Feeding

- Risk for deficient fluid volume related to diarrhea or excessive vomiting
- Imbalanced nutrition: Less than body requires related to anorexia or NPO status
- Risk for injury related to aspiration of stomach contents into the respiratory tract from difficulty swallowing.



# Question 1

- **Before beginning a tube feeding, what action should be done first?**
- Place patient flat in bed
- Fill the syringe with formula
- Flush tube with sterile water
- Check for proper placement

# Question 1

- **Before beginning a tube feeding, what action should be done first?**





## Question 2

- **Bill is a recently diagnosed HIV patient. Both Bill and his partner Pat are present for the nurse's discharge teaching regarding diet. Which of the following is true regarding diet therapy in HIV patients?**
- Emphasis should be placed on carbohydrate intake.
- Patients should be encouraged to eat three full meals a day.
- Weight gain, replacement of muscle mass and maintaining immune system are priorities
- Often HIV population is challenged with gaining excessive weight



## Question 2

- **Bill is a recently diagnosed HIV patient. Both Bill and his partner Pat are present for the nurse's discharge teaching regarding diet. Which of the following is true regarding diet therapy in HIV patients?**






## Question 3

- You are placing a NG tube, and your patient begins to cough and is having difficulty in breathing. What could be happening? What should you do?
- Patient is aspirating on stomach contents, Order an xray
- Tube is going into lung, immediately remove the tube quickly
- This is expected, continue with the placement
- Patient has an over-sensitive gag reflex, quickly finish procedure



## Question 3

- You are placing a NG tube, and your patient begins to cough and is having difficulty in breathing. What could be happening? What should you do?
- 



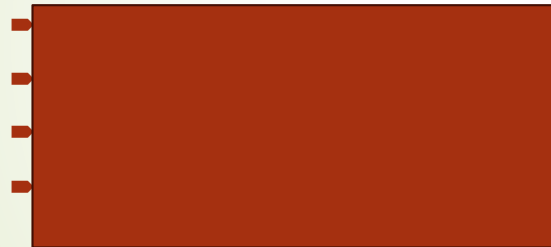
## Question 4

- Gabrielle's patient is admitted with a diagnosis of alcohol abuse. She is assessing her patient for any nutritional deficits. Which deficiency is often present with alcohol abuse?
- Niacin
- Thiamine
- Potassium
- Sodium



## Question 4

- Gabrielle's patient is admitted with a diagnosis of alcohol abuse. She is assessing her patient for any nutritional deficits. Which deficiency is often present with alcohol abuse?







## Question 5

- Sienna's patient is having difficulty swallowing. Her doctor has ordered a gastrostomy tube. Sienna explains to her patient that a gastrostomy tube is a tube placed:
- 1) through the nose into the stomach.
- 2) directly into the stomach.
- 3) directly into the intestines.
- 4) directly into the veins.



## Question 5

- Sienna's patient is having difficulty swallowing. Her doctor has ordered a gastrostomy tube. Sienna explains to her patient that a gastrostomy tube is a tube placed:

- 
- 
- 
- 
-



## Question 6

- What is the best method of ensuring a nasogastric tube is in the correct place?
- Gastric pH
- X ray
- Irrigation
- Hearing the "whoosh" sound



## Question 6

- What is the best method of ensuring a nasogastric tube is in the correct place?





## Question 7

- Your patient's feeding tube needs to be irrigated. How much, and what type, of solution should you use?
- 20 ml of water
- 30 ml of sterile water
- 120 ml of normal saline
- 10 ml of sterile water



## Question 7

- Your patient's feeding tube needs to be irrigated. How much, and what type, of solution should you use?

- 
- 
- 
- 
-

## Question 8

- Indications the patient is not tolerating tube feeds include all of the following EXCEPT:
  - Increased residual
  - Nausea/Vomiting
  - Diarrhea
  - Weight gain
  - Abdomen distention
  - Abdomen pain

## Question 8

- Indications the patient is not tolerating tube feeds include all of the following EXCEPT:







## Question 9

- As a nurse, when taking care of a patient with a nasogastric tube, what is the correct position for your patient?
- Flat position
- 30-90 degrees (semi-fowlers or higher)
- Trendelenburg position
- Left side lying position



## Question 9

- As a nurse, when taking care of a patient with a nasogastric tube, what is the correct position for your patient?

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## Question 10

- When providing an intermittent tube feeding, at a minimal how long should it take?
- 60 minutes
- 10 minutes
- 30 minutes
- 120 minutes



## Question 10

- When providing an intermittent tube feeding, at a minimal how long should it take?

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## Question 11

- What are warning signs a patient is not tolerating a feeding well? What should you do?
- Nausea, provide nausea medication
- Hyperglycemia, decrease the volume in half
- Nausea and diarrhea, stop the feeding and check residual
- Dehydration, speed up feeding



## Question 11

- What are warning signs a patient is not tolerating a feeding well? What should you do?

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## Question 12

Your patient is asking about which type of cholesterol will help them become healthier. You share...

- HDL (high density lipoprotein) is the increases fatty deposits on vessel walls, so avoid them
- LDL (low density lipoprotein) decreases fatty deposits on vessel walls, so increase them
- HDL (high density lipoprotein) cleanses vessel of fatty deposits, so increase them
- LDL (low density lipoprotein) is a carrier for triglycerides in blood, so avoid them

## Question 12

Your patient is asking about which type of cholesterol will help them become healthier. You share...







## Question 13

- You are caring for a patient who is having a TPN infusion. You notice the infusion is running slower than expected. What is the best action to do?
- Speed the infusion up
- Slow the infusion down
- Leave the infusion at the same rate
- Discontinue the infusion



## Question 13

- You are caring for a patient who is having a TPN infusion. You notice the infusion is running slower than expected. What is the best action to do?



