Ingestive Need IA

- Explain Role of Each Nutrient
  - CHO
  - Proteins
  - Fats
  - Vitamins
  - Minerals
  - Water
  - Lipids
- Fats
  - Saturated
  - Polyunsaturated
  - Hydrogenated fats
  - Trans fat
- Food Pyramid
- Variables Influencing Ingestion
  - Psychological influences
    - Religious
    - Cultural
    - Health beliefs
  - Physical environment
    - Hospitalization
  - Sensorium
  - Assess the use of eyes, ears, taste, touch, smell
  - Motor skills
    - Assess for adequate movement and coordination to feed self
- Aging
- Client’s Ability to Feed Self Safely
  - Assess ability to masticate and swallow
    - How would you assess this?
    - Interventions
      - Sit the patient at 90 degrees
      - Constant attendance while eating
      - Food cut into small bites
      - Remind them to swallow
      - Check for pocketing
  - Ability to feed self
    - How do you assess for these problems?
    - Interventions.
      - If needed, open cartons
      - Cut meat, butter bread
      - Towel may be used over chest if indicated
      - Assess for exhaustion. Client may be able to feed part of meal and then tire and need you to finish feeding.
  - Visually impaired client
    - Can learn to self feed
    - Will need teaching from nurse
- Calorie Count
Nursing personnel record what percentage of each item on the tray is consumed.
- Usually ordered for three consecutive days.
- Dietician calculates the actual calories.
- Helps physician decide if weight loss problem is because of decreased ingestion or decreased absorption of food.

- Adaptive equipment
  - Occupational therapist may equip clients with feeding devices which can be secured to the hand to assist in eating.
  - More likely to be seen with long term spinal cord injuries.

- Changing food habits
  - Nurses role is to educate the client as to why a change in diet will be good for their health. A dietician may be called.
  - Ultimately, the client will decide what he/she will or will not do.

- Physical Measurements
  - Admission height and weight should be compared to norms.
  - Look for trends in weight gain or loss
  - Estimating body muscle and fat
    - Adequate amounts of muscle and fat indicate adequate nutrition.
    - Measure fat by: Triceps skin fold
    - Total circumference of arm minus the fat is an estimate of the size of the muscle. An adequate muscle size indicates adequate protein stores
    - MAMC(cm)=MAC(cm)-[3.14 x TSF(cm)]
    - MAMC - mid arm muscle circumference
    - MAC - mid arm circumference
    - TSF - Triceps skin fold

- Body Mass Index
  - An estimate of total body mass that is highly correlated to body fat.
  - Health adults should have BMI between 18.5 to 24.9
  - Use normogram to determine BMI (Dudek pg 378)

- Ideal Body Weight
  - Quick method (Page 7 Dudek)
  - Men 106 lb for first 5 feet + 6lb for each additional inch
  - Women 100 lb for first 5 feet + 5lb for each additional inch
  - Actual / Ideal Body Weight
    - 120-199% obese, >200% Morbid obesity

- Body Shape
  - Pear - Women tend to carry fat on thighs and may be
  - Apple - Men tend to carry their fat in abdominal region and may be “apple shaped.”
  - Normal - A slim body contour.

- Laboratory Data
  - HGB
  - HCT
    - May be affected by diet. We need adequate amounts of protein and iron in order to make RBC’s. Anemia may indicate poor nutrition.
  - Cholesterol- total cholesterol level
    - (HDL and LDL are included in total.)
    - Desirable level is less than 200mg/dl
    - Undesirable level is greater than 240 mg/dl
- Cholesterol is a waxy substance that is produced by the human body and is also found in animal products.
  - Fat travels through your bloodstream attached to a protein – lipoprotein.
    - Two lipoproteins are the main carriers of cholesterol.
      - High density lipoprotein or HDL
      - Low density lipoprotein or LDL
    - HDL – high density lipoprotein
      - HDL works like a garbage truck. It removes excess cholesterol from the bloodstream and takes it to the liver. He liver excretes it.
        - Men – 35–70 mg/dl
        - Women 38-85 mg/dl
    - LDL – low density lipoprotein
      - Acts like a fat delivery truck. It picks up cholesterol from the liver and delivers it to the cells. When more cholesterol is ready for delivery than the cells can take, LDL cholesterol drops off extra cholesterol on the artery walls.
        - Men and women – greater than 160 is high risk
  - Triglycerides
    - A compound consisting of three molecules of fatty acid combined with glycerine.
    - Women - 35-135 mg/dl
    - Men - 40-150 mg/dl
    - A relationship exists between high triglyceride levels and coronary heart disease. High triglyceride levels may indicate poor eating habits.
  - TIBC – Total Iron Binding Capacity
    - Normal is 240 - 450 mg/dl
  - Transferrin – a transport protein that binds and carries iron from the intestines through the serum.
    - Normal is greater than 200 mg/dl
  - Protein
    - Normal value is 4 – 8mg/dl.
  - Prealbumin (transthyretin)
    - An extremely sensitive indicator of nutritional status.
    - Normal is 20 – 50 mg/dl
  - Albumin – the most abundant form of protein in the blood. Albumin is synthesized by the liver. The liver has to be functioning and there has to be an adequate supply of amino acids to be able to make albumin.
    - Normal value is 3.5 – 5.0 g/dl
  - Glucose - the only sugar found in the body in significant amounts. A measure of the body’s ability to metabolize glucose.
    - Normal value is 70 – 110 mg/dl.
    - Glucose levels are regulated by hormones, insulin being the primary hormone.
  - Dietary History
    - Evaluate nutrition using the food guide pyramid. (discuss meals at home on a typical day)
    - Evaluate % of meals ingested while in the hospital. (Look back at the recorded % of meal ingested while hospitalized. Getting an average of these numbers would be good.)
Health History
   o Look at all medical diagnosis.
     ▪ Is this medical condition caused by poor nutrition or does this medical condition contribute to poor nutrition?
       • Examples: Diabetes Mellitus contributes to poor nutrition because sugar remains in the blood and does not reach the cells.
       • Myocardial infarction (heart attack) may be caused by poor nutrition because of a high consumption of cholesterol rich foods.
   • Medications
     o List all medications- discuss the action of drug and why client is taking the drug.
     o Does drug affect nutrition ?
     o Is it being used combat the effects of poor nutrition ?
     o Does it have no impact on nutrition ?
     o Look for drug nutrient interactions (Potter pg 1283-1284)
       ▪ Ferrous Sulfate – an iron preparation which affects nutrition by increasing iron.
       ▪ Insulin – a hormone which carries glucose into the cells. This directly impacts nutrition.
       ▪ Lovenox – an injectable blood thinner which has no direct impact on nutrition.
   • Jean, age 35, just had surgery for bowel obstruction. Her medical history includes Crohn’s disease. Before this exacerbation, 3 months ago, Jean’s weight was 123 lbs. Admission weight was 115 lbs. Three days after surgery she now weighs 108 lbs. Her height is 5’ 5’’. Reported lab values are pre-albumin 10 mg/dl, and albumin is 2.3gm/dl.
     o What is Jean’s BMI?
     o Evaluate Jean’s lab data.
     o What nursing diagnosis would you suggest given the above data?
   • Your patient, William is 5’ 10’’ and weighs 275 lbs. He has a history of NIDDM and hypertension. These are his lab values.
     o Total Cholesterol 270
     o HDL Cholesterol 84
     o LDL Cholesterol 160
     o Triglycerides 61
     o Fasting Blood Sugar 290
     ▪ Based on his labs what kinds of foods has he been eating.
     ▪ Evaluate his blood sugar.
     ▪ What nursing diagnosis would you suggest given the above data?
   • Normal and Modified Diets….
     o If no diet order is ordered, then keep the patient NPO until speaking with the physician.
   • Normal, Regular or House diet
     o Used for patients who do not have altered nutritional needs related to illness or injury.
     o No foods are excluded.
     o Nutritional value depends on what the client selects.
   • Diet as tolerated (DAT)
     o Nurse advances the diet according to how the patient tolerates it.
     o Frequently a DAT is ordered after surgery.
   • Modified Consistency Diets
   • Clear liquid
- Used short term.
  - Clear liquids or foods that become liquids at body temperature. (Gelatin)
  - Provides electrolytes and CHO but inadequate in calories and all nutrients.
- Full liquid
  - Composed of foods that are liquid or liquefy at body temperature.
  - Can be planned to approximate the nutritional value of a regular high caloric, high protein diet making them suitable for long term use.
- Soft diet
  - Texture may be smooth and creamy to moderately crisp.
  - Raw vegetables, coarse breads and gas forming foods are excluded.
- Mechanical soft diet.
  - A regular diet modified in texture only.
  - Any moist food that requires a minimum of chewing.
  - Often are chopped foods.
- Modified Nutrient Diets
  - These diets are therapeutic, meaning they are used to treat disease.
  - They are modified in:
    - Concentration of macronutrients (high protein, low protein, calorie restricted)
- ADA diets – American Diabetic Association diets
- Liquid supplements are often used because a person is unable or unwilling to consume adequate amounts of food.
  - Contain CHO, protein and fats.
  - Taste best when served cold.
  - Expensive! Over $2.00 per can.
  - Can be used for tube feeding also.
- Feeding Pts by tubes
  - Normal eating (any diet) is preferred, if unable tube feedings are used.
  - Appropriate for persons who will become or are malnourished because of inadequate oral intake.
  - Client must of course have a functioning GI tract.
  - Examples of clients who have problems chewing or swallowing and may require tube feeding.
    - Prolonged lack of appetite
    - Obstruction in esophagus
    - Fistula
    - Altered mobility of GI tract
    - Coma
  - Solutions for GT Feedings
    - Intact formulas - Made from complete proteins, CHO and fats.
      - Complete in minerals, vitamins and trace elements.
      - Requires normal digestive and absorption capacities.
    - Food dye
      - In the past, tube feedings were often colored with blue dye. It was felt this helped detect aspiration.
- Blue dye is no longer recommended. There is no research showing that it is helpful in detecting aspiration and may be harmful.
  - Hydrolyzed formulas
    - Also known as elemental formulas.
    - Contain partially digested formulas.
    - Intended for clients with impaired digestion or absorption.
    - Example - Vivonex
  - Modular products
    - One macro nutrient added to increase nutrition.
    - Protein powder (Promod)
    - CHO powder
    - Fats – MCT oil
- Lavage
- Gavage
- Types of tubes
  - Small bore tubes – can’t aspirate through
  - Large bore tubes
  - Salem sump
  - Levin tube
  - How do you confirm placement?
  - How do you assess for patency?
  - How do you remove the NGT tube?
- Administering NGT Feedings
  - Continuous feedings
    - Before instituting a NGT tube feeding an x ray is taken for placement documentation.
    - Assess tube placement externally by noting the black marks on the tube.
    - Always check placement internally each time you are going to instill water, meds or feeding.
    - HOB up at least 45 degrees to minimize risk for aspiration. This is the most serious complication.
    - Check that the right solution if hanging and infusing at the right rate.
    - Check residual at least every 4 hours.
    - Residual should not be greater than 100 cc or the rate of infusion per hour.
    - When you need to put HOB down to perform some intervention, turn tube feeding off….. Then raise HOB and resume feeding.
  - Administering Intermittent NGT Feedings
    - Also called bolus feedings.
    - May be ordered q4h or q6h.
    - Example: Ensure 250cc q4h.
    - More like a normal eating pattern.
    - Of course check placement each time.
  - Since one nostril is occluded, they tend to mouth breathe - so they need frequent oral care.
  - Sore throat is common from tube irritation.
  - Nasal mucosa can become irritated and excoriated.
    - Care of the nares
    - Frequent lubrication with water soluble jelly is helpful.
    - Frequent oral care.
- Problems with NGT Feedings
  - Nasal erosion / necrosis
  - Nasal septum abscess
  - Perforation of esophagus or stomach
  - Clogging
  - Unexplained extubation
  - Tube rupture
  - ASPIRATION (common and devastating)
  - GT feeding into intravenous line (uncommon)

- Gastrostomy Tube Feedings
  - Placement does not need to be checked.
  - Tubes are placed surgically.
  - If PH of stomach is checked it should be acidic.
  - All other administration precautions are the same as NGT feedings.
  - G tube site needs assessment.
  - Dressing change daily on new tubes.
  - Problems with GT tubes
    - Gastric outlet obstruction
    - Gastroesophageal reflux
    - Burried bumper syndrome
    - Stoma infection
    - Leaking gastric contents
    - Local discomfort
    - Catheter deterioration
    - ASPIRATION

- Jejunostomy Feedings
  - Jejunum contents are alkaline.
  - Hospital protocols say not to aspirate a J tube. They are easily clogged up.
  - Feeding are always continuous.
  - Patency is checked by the ability of fluids to go in.
  - Both G and J tubes are placed surgical
  - Placement does not need to be checked.
  - Tubes are placed surgically.
  - If PH of jejunum is checked it should be alkaline.
  - All other administration precautions are the same as GT feedings.
  - J tube site needs assessment.
    - Dressing change daily on new tubes.

- Fluid Balance Objective 13
  - F/E Balance
  - Factors that threaten balance
  - Body composed of 40 to 60% water
  - Average total intake/output is 2500 ml /24h
    - List sources of input/output
    - Output should equal intake
    - How does fluid leave the body
  - I/O is an important assessment by the nurse.
    - Look to see if intake equals output over the last 3 days).
• I and O totaled:
  • At shift’s end
  • At the end of 24 hours day

• Measuring Intake - Includes
  o Oral intake
  o Free water
  o Fluids on the meal trays
  o Also includes anything solid at room temperature which melts in the stomach (ice, gelatin, ice cream)
  o Intravenous intake

• Measuring Output - Includes
  o Urine
  o Diarrheal stool
  o Vomitus
  o Drainage from gastric suction
  o Drainage from tubes

• Which patients are on I/O? Patients with…..
  o Fever
  o Medications
  o Those recovering from surgery
  o Unstable condition
  o Generally those with heart, lung and kidney problems
  o Treatments

• Who orders I and O?
  o Physicians order I / O
  o Nurses may order I / O

• How is I/O managed?
  o Each agency has their particular policy
  o Oral Intake
    • Commonly, the water pitcher at bedside is filled at the beginning of the shift by the CNA. At the end of the shift the CNA looks inside the pitcher and determines the amount ingested during the shift.
    o The water intake is added to the fluids ingested from the meals
    o The total oral intake is entered in the I/O sheet
  o Intravenous intake
    • In most institutions, it is the RN’s responsibility to manage IV therapy including entering IV intake on the I/O
  o Output
    • Each agency has their particular policy
    • Foley caths need to be emptied, measured and recorded.
    • Drainage from any drain need to be emptied, measured and recorded.

• RN is responsible to make sure I/O is accurate. This may involve…..
  o Teach nursing personnel
  o Teach the patient
  o Teach the family

• QUIZ
Your patient is on I/O. During your eight hour shift he ingests these amounts. Calculate his oral intake on your shift. Calculate the total intake.

- Coffee   5 ounces
- Milk     8 ounce carton
- Water    400 cc
- Intravenous fluids 100 cc/hr for 8h

- **Fluid Restriction**
  - Renal and cardiac patients are often on “fluid restriction”
  - Physician orders the amount of the fluid restriction
  - A fluid restriction may be as low as 800 cc per 24 hours
  - RN allocates the amount of fluids to be given per shift
  - Dietary needs to be advised that the patient is on limited fluids
  - The bedside water pitcher should not be used for a patient on fluid restriction
  - These patients are thirsty and usually want more water
  - QUIZ
    - A patient is restricted to four 8 ounce glasses of water per day. The nurse knows that the patient’s fluid intake is restricted to ___________ ml / day.

- **Pushing fluids**
  - Patient needs more than the average 1500 ml/day
  - Physician orders “push fluids”- but generally does not give a specific amount
  - RN allocates the amount of fluids to be given per shift
  - QUIZ
    - Your patient has a foley catheter and should get additional fluids. In addition, the physician has ordered “push fluids”. Devise a plan of care to make sure this as accomplished.

- **Intravenous Site Assessment**
  - Infiltration – fluids enter the subcutaneous tissue around venipuncture site.
  - Swelling or edema
  - Pallor
  - Pain
  - Coolness
  - Interventions
    - If infiltration occurs discontinue IV.
    - If badly swollen - Elevate extremity
    - Warm moist warm compress
    - Restart IV in site proximal to infiltration or in another extremity
  - Phlebitis – an inflammation of the vein caused by the catheter or by chemical irritation from drugs or solutions.
    - Redness at insertion site
    - Inflammation spreads up the vein (red streak)
    - Becomes warm and painful
    - Interventions
      - Discontinue IV.
      - Moist warm heat can be applied
      - Restart IV proximal to the site or in another extremity
      - Phlebitis is dangerous because thrombophlebitis can occur which may result in emboli
• Fluid Compartments in the Body
• Osmosis
• Osmolarity/Osmolality
• Body Compartments
  o Intracellular - inside the cells 25 liters
  o Interstitial - around the cells 10 liters
  o Intravascular- inside the vessels 5 liters
• Homeostasis
  o To maintain homeostasis fluids move freely from compartment to compartment through semipermeable vascular and cellular membranes.
  o Fluids move from compartment to compartment because of osmosis.
  o Osmosis is governed by fluid osmolarity.
  o The body wants the same osmolarity on both sides of a membrane.
  o Blood Osmolarity
    ▪ The concentration of electrolytes in the blood and other body fluids.
    ▪ Normal osmolarity in the body fluids is 275 – 295 mOsm per liter.
  o Fluids move in the body because of differences in osmolarity between the compartments.
  o QUIZ
    ▪ If blood has an osmolarity of 290 and the interstitial fluids have an osmolarity of 200 which way will fluids move?
    ▪ If blood has an osmolarity of 200 and the interstitial fluids have an osmolarity of 290 which way will fluids move?
  o REMEMBER: The body wants the same osmolarity on both sides of the membrane.
• Intravenous Fluid Osmolarity
  o Isotonic fluids 240 - 340
  o Hypotonic fluids less than 240
  o Hypertonic fluids greater than 340
• Isotonic Fluids
  o When isotonic fluids are given there is no shifting of fluids because the osmolarity of the IVF and the blood is essentially the same.
    ▪ Lactated Ringers 275 mOsm
    ▪ Ringers injection 275mOsm
    ▪ Normal Saline or 0.9% saline 308 mOsm
    ▪ D5W 260 mOsm
• Hypertonic Fluids
  o When hypertonic fluids are given they raise the serum (blood) osmolarity. Fluid moves from the interstitial and intracellular compartment into the vein.
    ▪ 5%D / 0.45%NS 406 mOsm
    ▪ 5%D / NS 560 mOsm
    ▪ 5%D / LR 575 mOsm
  o HYPERTONIC FLUIDS CAUSE SHIFTING OF FLUIDS INTO THE BLOODSTREAM
• Hypotonic Fluids
  o When hypotonic fluids are given they lower the serum osmolarity. Fluid moves from the vein into the interstitial and intracellular compartments.
    ▪ 0.45% NS 154 mOsm
- 0.33% NS 103 mOsm
- 2.5% Dextrose 126 mOsm

HYPOTONIC FLUIDS CAUSE SHIFTING OF FLUIDS INTO THE INTERSTITIAL SPACE AND CELLS.

- **QUIZ**
  - What kind of patient needs isotonic fluids?
  - What kind of patient needs hypertonic fluids?
  - What kind of patient needs hypotonic fluids?

- **QUIZ**
  - Your patient has a serum osmolarity of 290. The physician orders IVF of Lactated Ringers. Could there be any shifting of fluids between compartments?

- **QUIZ**
  - Your patient is very dehydrated. His blood pressure is extremely low at 80/40. The MD has ordered 0.45% NS at 100 ml/hr. What do you think about this order?

- **QUIZ**
  - Your patient with a CVA has a BP of 200/90. The physician has ordered 1L 5% D/LR over 8h. What should you say to the physician?

- **QUIZ**
  - Your patient has poor skin turgor and very dry skin. The resident has ordered 2.5% Dextrose TRA 100 ml/hr. What do you think about this order?

- **Calculating IV Flow rates**
  - **Objective 13**

  - **Step I**
    - Total # of milliliters
    - Total # of hours

  - **Step II**
    - ml/hr X drop factor
    - 60m Minutes

- **Nursing Diagnoses**
  - Fluid Volume excess- Experiencing vascular, interstitial or intracellular overload
  - Fluid volume deficit- experiencing vascular, interstitial or intracellular dehydration
  - Nutrition altered: Less than body requirements – experiencing reduced weight related to inadequate intake or metabolism of nutrients for metabolic needs
  - Nutrition altered: More than body requirements – experiencing weight gain related to an intake in excess of body needs.
• Evaluation of Client Nutrition Assignment
  o Clinical observations:
    ▪ Clinical signs of good nutrition and poor nutrition are reviewed on Pg. 1351 (pg1290 in Fundamentals of Nursing and in Dudek on pg 9) and should be recorded as asked for on pg 79 of module.
    ▪ Collect all your data in clinical and determine normal and abnormal data.
  o Evaluation of Client Nutrition
    ▪ Your paper should have introductory and conclusion paragraphs.
    ▪ Your paper should include a paragraph on each of the major categories.
    ▪ Dietary and health history
    ▪ Physical measurements
    ▪ Laboratory tests
    ▪ Clinical observations
    ▪ Evaluation of Client Nutrition
  o Explain abnormal data as it relates to your patient’s medical diagnoses and medications.
  o Summarize your conclusions regarding your patients’ overall nutritional status. Be sure to answer the question, “Is your client meeting their ingestive need?” (Don’t make the mistake of simply listing data and drawing no conclusions.)