Managing Fluid and Electrolytes in the HPN Patient

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Disclosures

• None
Overview

• Understanding Hydration
• What Causes Dehydration
• Recognizing Dehydration
• Fluid & Electrolyte Management
• When to Call
Hydration = Water & Sodium

• Water losses:
  - Urine
  - Sweat
  - Stool...also the main source of sodium loss

• Sodium (salt) balance:
  - Water alone will not maintain hydration
  - Normal kidneys can retain sodium
  - Prolonged dehydration can cause kidney injury
Causes of Dehydration

• Decreased fluid intake
• Fluid loss from Diarrhea
• Fluid loss from Vomiting
• Fluid loss from tubes or drains
• Increased sweating (Fever)
• Increased urine output (high sugar)
Dehydration Symptoms

• Be alert for ↑ stool, vomiting, sweating ...(measure stool?)
• Lightheadedness on standing
• Fatigue, sleepiness, exhaustion
• Increased thirst
• Low urine volume ...(measure urine?)
• Darker urine
• Headache
• Muscle weakness or cramping
• Increased heart rate
• Confusion
• Seizures and coma
Signs of Dehydration

Skin pinch test - Tenting
Maintaining Hydration

• Reduce fluid losses
  - Decrease diarrhea....It takes teamwork
  - Follow dietary recommendations
  - Consume oral rehydration solutions (ORS)
  - Medications

• Provide adequate fluid volume
  - Maintenance fluid
  - Replacement fluid
Maintenance Fluid

• Provides daily fluid needed for normal metabolism
• Primarily based on age and weight
• Calculated for each individual
• Also provides electrolytes
Replacement Fluid

• Correction for extra losses of fluid and electrolytes ...mainly from the bowel
• Factors
  - Remaining bowel length and function
  - Which bowel segments remain
• Requires close monitoring to determine needs
  - Stool and urine volume measurements
  - Blood electrolyte monitoring
Electrolyte losses

• Sodium
• Potassium
• Magnesium
• Chloride
• Bicarbonate (Replaced as acetate in PN)
Fluids in the Bowel

Dietary input
Food and drink 2000 mL

Digestive secretions
Saliva 1500 mL

Gastric secretions
1500 mL

Liver (bile) 1000 mL
Pancreas (pancreatic juice) 1000 mL
Intestinal secretions
2000 mL

5000 mL

Water reabsorption
Small intestine reabsorbs 7800 mL

Colonic mucous secretions 200 mL

1200 mL

Colon reabsorbs 1250 mL

1400 mL

150 mL lost in feces
Electrolyte replacement

• Must be individualized
• Based on frequent serum monitoring
• Monitoring frequency can be reduced as measurements become stable
If you Suspect Dehydration – When To Call

• ORS don’t improve symptoms
• No urine output for 8 hours
• Lightheadedness
• Low Blood Pressure
• Cold and clammy skin
• Skin pinch test “Tenting”
• Don’t wait longer than 24 hours!
Questions and Discussion