DKA Treatment

- Rehydration = #1
  - Initial fluid of choice is 0.9% NS →rate of infusion dependent on clinical state of patient
  - If pt is hypernatremic → 0.45% saline in order to provide electrolyte free water
  - When BG reaches 200-300 or less →change to D5W to prevent decline in blood glucose level and so that insulin can be continued to achieve ketone clearance
- Restore electrolytes
  - Major electrolyte of concern is **POTASSIUM**
  - Initial plasma concentration may be low, normal, or high, but more often than not tends to be high (hyperkalemia)
  - Rehydration leads to:
    - Increased plasma volume and subsequent decreases in serum potassium
    - Increased urinary excretion of potassium
- Reverse acidosis
- Reversed with the use of insulin
- Insulin is usually infused IV at a slow, continuous rate (e.g., 5 units/hr)
- Hourly blood glucose values must be measured
- Regular insulin (only IV insulin) may be added to IV solutions

Insulin Administration

  - IV insulin @ rate of 5 units/ hr
  - Only "regular" insulin may be administered IV

HHS Treatment

- Rehydration
- Insulin administration
- Monitor fluid volume and electrolyte status
- Monitor for hypervolemia d/t massive rehydration

Diabetes Insipidus S/Sx

- Polyuria (excessive urination)
- Polydipsia (intense thirst)
- Nocturia (urinating frequently at night)
- Fatigue
- Dehydration

Diabetes Insipidus Dx

- Decreased urine specific gravity (<1.005)
- Decreased urine osmolality (<200)
- Decreased urine pH

- Decreased urine sodium
- Decreased urine potassium
    - Increased serum osmolality (>300)
    - Increased serum sodium
    - Increased serum potassium

Diabetes Insipidus Tx: Pharmacologic treatment and expected findings

- Desmopressin = Tx (replaces ADH)
    - Decreases urine volume
    - Increases urine concentration
    - Reduces frequent urination + thirst

Treatment of hypoglycemia

- Check blood glucose level.
- Follow guidelines outlined by the provider or diabetes educator.
- Instruct the client who has hypoglycemia (glucose of <70) to take 15-20g of readily absorbable carbohydrates (4-6 oz of fruit juice or regular soft drink, glucose tablets or glucose gel per package instructions, 6-10 hard candies, or 1 tbsp of honey) and recheck blood glucose in 15 min.
- Repeat the administration of carbohydrates if not WNL, and recheck blood glucose if 15 min.
- If blood glucose is WNL, have a snack containing a carbohydrate and protein (if the next meal is more than 1 hr away). Blood glucose increases approximately 40mg/dL over 30 min following ingestion of 10g of absorbable carbohydrate.
- If the client is unconscious or unable to swallow, administer glucagon subcutaneous or IM (repeat in 10 if still unconscious) and notify the provider. Place the client into a lateral position to prevent aspiration.
- In acute care, the nurse should administer 50% dextrose if IV access is available. Consciousness should occur within 20 min.
- Once consciousness occurs and the client is able to swallow, have the client ingest oral carbohydrates.
- <u>Simple Carbohydrates to Treat Hypoglycemia</u>
    - Commercially prepared glucose tablets
    - 6-10 Life Savers or hard candy
    - 4 tsp of sugar
    - 4 sugar cubes
    - 1 tbsp of honey or syrup
    - ½ cup of fruit juice or regular (nondiet) soft drink
    - 8 oz of low fat milk
    - 6 saltine crackers
    - 3 graham crackers

DKA S/Sx

- Hyperglycemia (>300 - 1000)
- Dehydration and electrolyte loss (d/t polyuria)
- Metabolic acidosis
- Hyperglycemia, dehydration (normal to lose 1-3L), electrolyte loss, metabolic acidosis
- Ketones in blood and urine
- Rapid onset
- Polyuria
- Polydipsia
- HA
- Orthostatic hypotension → dehydration
- Fatigue
- Blurred vision
- Anorexia
- N/V
- Abd pain (GI)
- Fruity breath
- Alert, lethargic, or coma
- Hyperventilation, deep but not labored resps = kussmaul resps
- Ketoacidosis = low bicarb, pH, and PCO3
- increase in Creatinine, Hct, BUN

Hypoglycemia S/Sx

- Mild: hunger, nervousness, palpitations, sweating, tachycardia, tremor
- Moderate: confusion, double vision, drowsiness, emotional changes, HA, impaired coordination, inability to concentrate, irrational or combative behavior, lightheadedness, numbness of the lips and tongues, slurred speech
- Severe: difficulty arousing, disoriented behavior, loss of consciousness, seizures

SIADH risk factors

- Head injury
- Tumor or lesion
- Irritation near or around pituitary gland
- Surgery to pituitary gland
- Infection
- Lithium carbonate or demeclocycline

Thyroid crisis nursing actions/interventions

- Maintain patent airway with O2 administratio
- Continuous cardiac monitoring
- Maintain normal temperature
- Administer thionamides and then sodium iodine 1 hour after
- Administer Beta blockers
- Administer glucocorticoids
- Administer IV fluids

Myxedema S/Sx

- Respiratory failure
- Hypotension
- Hypothermia
- Hypoventilation
- Bradycardia
- Dysrhythmia
- Hyponatremia
- Hypoglycemia

Myxedema nursing actions

- Maintain airway patency
- Initiate aspiration precautions
- Admin IV fluids as prescribed

Addisonian crisis nursing actions/interventions

- Administer insulin and dextrose
- Administer calcium and sodium polystyrene sulfonate
- If acidosis occurs, administer sodium bicarbonate
- Loop or thiazide diuretics
- Establish an IV line and initiate a rapid infusion of 0.9% NS
- Monitor VS and electrolytes
- Administer hydrocortisone sodium succinate as replacement therapy
- Administer an H2 antagonist, such as ranitidine, IV for ulcer prevention
- Monitor I&O, electrolytes, glucose levels
- Administer saline infusions to restore fluid volume; observe for dehydration; obtain orthostatic V/S
- Administer hydrocortisone IV bolus and a continuous infusion or intermittent IV bolus
- Provide meticulous skin care, Q2H turns
- Maintain a safe environment

Cushing's syndrome S/Sx

- Moon face/Buffalo hump
- Purple striae on abdomen + back
- Heavy trunk w/ thin extremities
- Weight gain w/ **back + joint pain** (increased appetite)
- **ED/decreased libido, irritable**, **depression**, **weak**, **fatigue**, **sleep disturbances**
- Decreased immune + inflammatory response
- Thin + fragile skin, petechiae
- Tachycardia
- Gastric ulcers
- Hyperglycemic
- Hypernatremic

Nursing actions/interventions for Cushing's syndrome

- Monitor I&O and daily weights
- Assess for indications of hypervolemia
- Maintain a safe environment to minimize r/o pathologic fracture or skin trauma
- Prevent infection by performing frequent hand hygiene
- Encourage physical activity within client's limitations
- Provide meticulous skin care
- Change client's position q 2 hr
- Monitor for and protect against skin breakdown and infection
- **Use surgical asepsis when performing dressing changes and any invasive procedures**

Correct steps to take blood glucose test

- Hand hygiene
- Insert test strip into meter
- Use lancing device on the side of fingertip to get blood
- Touch and hold the test strip to blood and wait for results on meter
- Blood glucose level will appear on meter display
- Discard items in appropriate trash receptacle
- Hand hygiene

SIADH treatment/nursing actions

- Restrict oral fluids (0.5-1 L/day)

- Monitor I&O
- Monitor VS for increased BP, tachycardia, and hypothermia
- Auscultate lung sounds to monitor for PE
- Weigh client daily
- Report AMS
- Reduce environmental stimuli
- Monitor urine and blood chemistry

What causes Addison's disease and Cushing's syndrome?

Addison's disease – lack of ACTH → Need to Add cortisol

Cushing's syndrome – excess ACTH → Cut down ACTH production

Complications of peritoneal dialysis and the associated s/sx of those complications?

- Can allow microorganisms into the peritoneum
  - Monitor for s/sx of infection (peritonitis) → can lead to **sepsis**
    - Abd pain or tenderness
    - Fever
    - N/V/D
    - Anorexia
    - Low urine output
    - Thirst
  - Protein loss
  - Hyperglycemia and hyperlipidemia
  - Poor dialysate inflow or outflow

Complications of hemodialysis and the associated w/sx of those complications

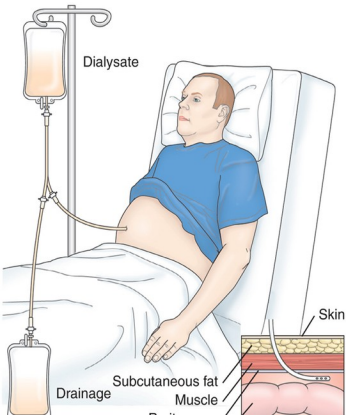
- Clotting/infection of the access site
- Immunosuppressive disorders increase the risk of infection
- Advanced age is at risk for induced hypotension due to chronic illness
- Disequilibrium syndrome
- Anemia

Labs that can be affected by dialysis

- BUN
- Hgb
- K+
- Albumin

Peritoneal dialysis education

- Uses pt's peritoneal membrane as the semipermeable membrane to exchange fluid & solutes --- Helps sustain life for pt. who have acute or chronic kidney disease requiring dialysis
  - Rids the body of excess fluid and electrolytes
  - Achieves acid/base balance
  - Eliminates waste products
  - Restores internal homeostasis by
    - Osmosis / Diffusion / Ultrafiltration
  - Involves instillation of HYPERtonic **dialysate** solution into the peritoneal cavity and subsequent dwell times
  - Drain the dialysate solution that contains the waste productions
  - **Peritoneum** serves as the filtration membrane



End stage kidney disease education/precautions

- GFR <15
- End-stage kidney disease exists **when 90% of the functioning nephrons are destroyed** and are no longer able to maintain fluid, electrolyte, and acid-base homeostasis
- Dialysis or kidney transplantation can maintain life, but neither is a cure for CKD
  - **Preventative measures through health promotion**
    - **Drink at least 2L water daily**
    - **Test for albumin in urine annually**
    - **Limit OTC NSAIDS**

Fluid overload s/sx r/t dialysis

- Dependent and generalized edema
- Dysrhythmias (hyperkalemia)
- Crackles
- SOB
- JVD

Foods (examples) to avoid with CKD

- Foods containing high sodium (salt)
- Processed meats (ham, bacon, lunch meats, sausage)

- Canned soups
- Frozen dinners
- Pickled foods (pickles, olives)
- Condiments (soy sauce, ketchup, BBQ sauce)

CKD nursing education about nutrients

- Restrict dietary Na+, K+, Ph-, and Mg+
- Provide a diet that is high in carbohydrates and moderate in fat
- Restrict intake of fluids (based on urinary output)
- Limit OTC NSAIDs, salt, alcohol, smoking

ESRD S/Sx

- N/V
- Anorexia
- Fatigue/weakness
- Insomnia
- Altered LOC
- Muscle cramps and twitching
- Edema of the lower extremities
- Pruritus
- SOB
- HTN
- Chest pain

Kidney transplant contraindications

- Conditions that increase the risks involved in kidney transplantation surgery, lifelong immunosuppression, and organ rejection
- Age <2, Age >70
- Advanced, untreatable cardiac disease
- Chemical dependency
- Chronic infections or system diseases
- Coagulopathies and certain immune diseases
- Morbid obesity, DM/ COPD
- Untreated GI diseases, such as peptic ulcer disease

Kidney transplant organ rejection s/sx

- Hyperacute: w/in 48hr after surgery
    - Fever, HTN, pain at transplant site

- Acute: 1wk-2yrs after surgery
    - Oliguria, anuria, low-grade fever, HTN, tenderness of new kidney, lethargy, azotemia, fluid retention
- Chronic: gradual over months-years
    - fever, increased BP, swelling/tenderness over new kidney, Oliguria, gradual return of azotemia, fluid retention/ edema/ wt gain, electrolyte imbalance, & fatigue
    - Pts taking cyclosporine may be asymptomatic – only has rise in Creatinine

AKI and ABGs

- ABG: metabolic acidosis
    - Administer sodium bicarbonate if the client has severe metabolic acidosis
- ECG dysrhythmias = tall T-waves
    - RN = monitor daily weights, **RESTRICT** K+, Phosphate, Na+, Mg

AKI labs

- Serum creatinine gradually increases 1-2 mg/dL every 24-48 hr, or 1-6 mg/dL in 1 week or less
- BUN can increase 80 to 100mg/dL within 1 week
- Urine specific gravity varies in postrenal type
- Can be elevated up to 1.030 in prerenal type
- Diluted as low as 1.000 in intrarenal type
- Serum electrolytes:
    - sodium can be decreased (prerenal azotemia) or increased (intrarenal azotemia)
    - hyperkalemia, hyperphosphatemia, hypocalcemia
- Hct: decreased
- UA: presence of sediment (RBS, casts)
- ABG: metabolic acidosis

Acute pancreatitis S/Sx and labs

- Severe, constant, knife-like pain (LUQ, mid-epigastric, and/or radiating to back)
- Sudden onset of severe, boring pain (goes through the body)
- Epigastric, radiating to back, left flank, or left shoulder
- Worse when lying down
- Pain relieved somewhat by fetal position or sitting upright, bending forward
- N/V/ Weight loss
- Seepage of blood-stained exudates into tissue as a result of pancreatic enzymes actions
- Ecchymosis on the flanks - Turner's sign
- Bluish-gray periumbilical discoloration - Cullen's sign
- Generalized jaundice
- Absent or decreased bowel sounds

- Warm, moist skin; fruity breath (hyperglycemia)
- Ascites

Labs

- Serum lipase - increases slowly but remains elevated for up to 2 weeks
- WBC count - increased d/t infection/inflammation
- Serum liver enzymes and bilirubin - increased with associated biliary dysfunction

DM patient education and reducing risk of complications

- 1/3 undiagnosed → 1 out of 3 Americans will have DM by 2050
- Diagnostic criteria for diabetes include **2 findings** (on separate days) of at least 1 of the following:
- **S/Sx diabetes** +PLUS+ **casual blood glucose concentration of greater than > 200** mg/dL (w/o regard to last meal)
    - Classic s/sx diabetes = polyuria + polydipsia + unexplained weight loss
- **Fasting blood glucose over > 126** mg/dL
    - fasting = no caloric intake x 8 hrs
    - Postpone admin of antidiabetic med until AFTER level is drawn
    - Instruct pt. To fast 8 hr prior = NPO except H20 is OK
- **2-hour** postload glucose **> 200 mg/dL** DURING **oral glucose tolerance test** (mostly with gestational diabetics)
    - OGTT = 75 g anhydrous glucose dissolved in water
    - BG levels checked q 30 mins within 2 hr period
- **A1C over > 6.5%** (exception to 2-findings rule d/t 3 mo time span)
    - Confirm by repeat testing on a different day
    - **Best indicator over 90-120 days timespan**
    - **Non-diabetic reference range = 4-6%**
    - **W/diabetes = 6.5 - 8% with a TARGET total of < 7%**
        - No fasting needed
        - Quarterly or twice yearly
        - 4x / year for diabetics

Kidney biopsy nursing interventions/plan

- Clients receive sedation and ongoing monitoring
- **Pre-procedure**
    - Obtain informed consent
    - Obtain urine specimen
    - Review coagulation studies
    - NPO for 4-6 hrs
- **Post-procedure**

- Monitor VS following sedation
- Assess dressings and UO (hematuria)
- Review Hgb and Hct values
- Administer prn pain medications → assess for flank pain

Thyroid storm treatment/nursing actions

- Pharmacologic treatment
  - Beta-blockers
  - Thionamide
  - Iodinated radiocontrast agent
  - Glucocorticoids
- Nursing actions
  - Maintain patent airway
  - Provide continuous cardiac monitoring for dysrhythmias
  - Administer acetaminophen to decrease temperature
  - Cool pt. w/ cool packs or cooling blankets, cool IV fluids, monitor I&O, O2, sat
  - Admin IV fluids

Endoscopy nursing actions/patient education

- Endoscopy is first line management for GI bleeds and performed within 24 hrs from onset of bleeding
- Fast 4-8 hrs before the endoscopy procedure to ensure stomach is empty
- Stop taking certain medications, such as blood thinners days before procedure
  - Tell doctor about all medications and supplements taking beforehand