

N441 Concepts for Exam 2

1. Blood Gases
 - a. pH: 7.35-7.45
 - b. CO₂: 35-45
 - c. HCO₃: 22-26
 - d. If it's not fully compensated then it's uncompensated(on this exam, there are no partials)
2. Resp acidosis (EKG changes)
 - a. widened QRS complexes (V-Fib)
3. Respiratory alkalosis:
 - a. **Breathe into a paper bag**
 - b. Try breathing while pursing the lips
4. Electrolyte Imbalances (what conditions cause electrolyte imbalances)
 - a. diarrhea, kidney disease or failure, Cushing's, DI, Crohn's, pancreatitis, Celiac, dehydration
5. Hyperkalemia (EKG changes, nursing interventions, diet adjustments, intervention medication generic and name brand)
 - a. EKG: **peaked T-waves**, premature ventricular contractions, ventricular fibrillation, widened QRS
 - b. RN interventions:
 - i. **Monitor cardiac rhythm**
 - ii. **Monitor I&O**
 - iii. Report and stop IV infusion of potassium, maintain IV access, stop all potassium supplements, and promote a potassium-restricted diet
 - iv. Monitor for manifestations of hypokalemia
 - v. Monitor blood potassium levels
 - c. Diet: low-potassium foods
 - i. Raw apples, cranberries, grapes, canned peaches, and cranberry and grape juice. Vegetables low in potassium include lettuce, cabbage, cucumbers, green peppers, sweet onions, green peas, and green beans
 - ii. Avoid: (citrus fruits, legumes, whole-grain, lean meat, milk, eggs, cocoa, some cola beverages)
 - d. Med: polystyrene sulfonate (Kayexalate). Severe hyperkalemia can require administration of calcium gluconate. Chronic or severe hyperkalemia can require dialysis
 - e. Glucose and insulin are used to treat hyperkalemia
6. Hypokalemia (medications that cause, dietary changes, symptoms esp at night with furosemide)
 - a. **Furosemide (Lasix) (& other diuretics)**, digitalis, corticosteroids, laxatives
 - b. Diet: **Bananas**, apricots, spinach, **citrus fruits and juices (oranges, etc)**

- c. S/sx: leg cramps (r/t to lasix & low K)
- 7. Hyponatremia (common symptoms)
 - a. S/sx: Hypothermia, tachycardia, rapid thready pulse, hypotension, orthostatic hypotension, diminished peripheral pulses, fatigue, decreased deep-tendon reflexes (DTRs). Nausea, malaise, and confusion
- 8. Alcohol causes hypomagnesemia
- 9. Hypocalcemia (common symptoms)
 - a. S/sx: tetany (most common sign), positive Chvostek's & Trousseau's signs **paresthesias**
- 10. Hypovolemia (compensatory mechanisms, symptoms, monitoring during volume replacement)
 - a. Compensatory mechanisms: tachycardia
 - b. S/sx: hypotension,
 - c. Monitoring: I & O, VS, ortho-risk for fall; changes in mentation, monitor weight q8
- 11. Normal Values for electrolytes
 - a. Potassium: 3.5-5
 - b. Na: 136-145
 - c. Ca: 9-10.5
 - d. Mg: 1.3-2.1
 - e. BUN: 10-20
 - f. Cr: .5-1.2
- 12. Dehydration
 - a. BP decreases
 - b. HR increases
 - c. Urine output decreases and urine has deeper color like amber or light brown. Specific gravity: 1.040
- 13. Fluid overload
 - a. s/sx: Distended neck veins
- 14. Which electrolyte is the most important? **Potassium**
- 15. Hypervolemia (treatment, diet adjustments, lab expectations, signs)
 - a. Tx: diuretics (thiazide, loop diuretics)
 - b. **Diet: restrict sodium (250 mg/day) and fluids. Low sodium**
 - c. Lab expectations: decreased H&H, serum & urine osmolarity, sodium, specific gravity, BUN, (b/c of dilution)
 - d. S/sx: tachy, bounding pulse, crackles, dyspnea, weakness, altered LOC

Prevention is key for shock and MODS.

- 1. Shock (identification, stages and signs, nursing interventions for irreversible shock, signs, how to prevent)
 - a. ID:
 - b. Stages & signs:
 - i. Initial: no visible changes

1. RN: monitor
 - ii. Compensatory: inadequate perfusion, tachycardia, changes in affect, anxious, confusion; normal BP, skin is cold and clammy, decreased urine output, resp. alkalosis
 1. RN: monitor VS,
 - iii. Progressive: all organs suffering from the hypoperfusion, decreased mental status, hypoxia, dysrhythmias, ischemia, MAP <65, sys BP <90, rapid shallow resp w/ crackles, skin is mottled/petechiae, lethargic, metabolic acidosis
 1. RN: telemetry, ABGs, electrolytes monitoring, etc., IV fluids, early nutritional support, control blood sugar, H2 blockers or antiseptics, frequent oral care,
 - iv. Refractory: organ damage is extremely severe; no response to treatment, MODS → complete organ failure, BP requires mechanical or pharm support, HR is erratic or asystole, resp requires intubation or mech ventilation, skin is jaundiced, anuric, unconscious, acidosis
 1. RN: same as in the progressive stage
 2. **prepare the family for the worse, because it's coming, keep it real with them.**
 - c. Prevention: early detection (know who's at risk), frequent hand washing to avoid infections, etc.
2. Septic Shock (prevention, pulse, expected lab work, fever)
 - a. Prevention: early detection, fluids,
 - b. Pulse: bounding
 - c. Expected labs: increased **WBC, CRP**, and procalcitonin
 - d. Fever: present
3. Cardiogenic (activity restriction, primary cause, treatment as it relates to afterload)
 - a. Activity: low activity/rest/save energy to lower oxygen demand
 - b. Primary cause: coronary/non-coronary
 - c. Tx: morphine as pain control, oxygen, fluid therapy, dobutamine, nitro, dopamine, antiarrhythmics, etc.
4. Neurogenic Shock (cause, expected vital signs)
 - a. Cause: spinal cord injury, spinal anesthesia, or other nervous sys damage
 - b. Expected VS: **bradycardia**, hypotension **the others are tachycardic so this is a unique sign for neurogenic shock**
5. Anaphylactic Shock (initial treatment, causes, symptoms, signs aka stridor and wheezing)
 - a. Initial tx: **EPI-1st line** treatment, stop the cause

- b. Causes: **allergic reaction** to substances (drug, chemical, vaccine, food, insect venom)
 - c. Signs: stridor, wheezing, rash, itching
- 6. Hypovolemic Shock (what blood products are appropriate, expected vital signs,
 - a. Appropriate blood products: PRBC
 - b. VS: tachycardia, CO, RR, anxious, low urine output
- 7. MODS (definition, what to assess, first failure organ, prognosis)
 - a. Definition: altered organ function in acutely ill patients; result of inadequate tissue perfusion
 - b. What to assess: perfusion, early signs of infection, changes in LOC,
 - c. First failure organ: lungs
 - d. Prognosis: death → provide support to the family
- 8. ABG's that indicate hyperventilation and appropriate interventions
 - a. Hyperventilation: (the body exhales and "get rid of" CO₂ from the blood, through the lungs, causing the pH to increase/become less acid; decrease in H ions) → respiratory alkalosis
 - b. Interventions: oxygen therapy, rebreathing techniques, anxiety reduction