Exam 3 (25-30 neuro, 15-20 immune, 5 lupus, 5 RA, 5-10 HIV)

Immune:

1. Rheumatoid Arthritis (RA): chronic, systemic autoimmune, effects all joints, remissions/exacerbations, extraarticular manifestations - symptoms that occur outside of just joint disease
   a. Causes: genetics/environmental triggers, family hx, unknown, antigen triggers - autoantibodies develop against the abnormal IgG formation (rheumatoid factor)
      i. R Factor deposits on synovial membranes, activate complement, inflammatory response
      ii. neutrophils damage cartilage/thicken synovial lining - inc inflammation
      iii. T-helper cells stimulate monocytes/macrophages – inc inflammation
   b. S&S: onsets typically insidious, fatigue, anorexia, weight loss, morning stiffness, hx of precipitating event, symmetrical symptoms, pain/stiffness/dec ROM, joints tender/painful/warm, fingers spindle shaped, subluxation (partial dislocation), walking disability
      i. Extraarticular S&S: dry mouth, itchy eyes, pericarditis, carpal tunnel, raynauds,
      ii. Deformities:
         1. Ulnar drift: fingers drift to ulnar side of hand
         2. Bouteonniere: joints nearest hand towards hand, farthest = away from
         3. Hallux Valgus: bunion
         4. Swan Neck Deformity: joints closest away from hand, farthest = toward
         5. Rheumatoid nodules appear subcutaneously as firm, non tender, translocation-type masses & are usually located over the extensor surfaces of jointed such as fingers and elbows
   c. Diagnostics: lab tests (Rheumatoid factor (RF), erythrocytes sedimentation rate (ESR), C-reactive protein (CRP), Antinuclear antibody (ANA), Anti-Citrullinated protein antibody (ACPA), synovial fluid analysis, x-rays, bone scans
   d. Treatment: NSAIDs, Salicylates (aspirin) [help w/ inflammation], Corticosteroids [help w/ inflammation, long term (risk for infection, BS, s/s of Cushings {Na increased, K+ decreased})], DMARDS - Methotrexate
      i. Biologics: TNF inhibitors (Enbrel, Humira) Sub Q inj
      ii. Nutrition: balanced diet to manage weight loss/gain
      iii. Acute Intervention: lightweight splints, perform ROM, soak in warm water, rest (8-10 hrs), body alignment, energy conservation, assistive devices, exercise, joint protection
         1. Cold therapy: 10-15min/each time
         2. Heat therapy: 20min/each time

2. Systemic Lupus Erythematosus (SLE): chronic, multisystem, spontaneous remis/exacerbations
   a. Causes: women of childbearing years/African American, genetics, infectious agents, antinuclear antibodies, antibodies deposit everywhere in the body

d/t lack of energy

gradual

Movement RELIEVES joint stiffness but still has pain. Emphasize low impact exercise

Raynaud's - lack of blood flow to tops of fingers = tingling & numbness

Nursing Interventions RA:
- lifestyle changes to accommodate ice & heat application & therapy
- rest & activity balance
- NSAIDS & DMARDS
- glucocorticoids
- PT & OT
- may need reconstruction joint surgery

If (+) they have RA

Elevated inflammation test

Causes a decrease in K+

Low dose Prednisone: may be used for limited time in select pts to decrease disease activity until DMARDS is effective

TNF: tumor necrosis factor

Used for early treatment for inflammatory process & rebuilding of synovial fluid in joints

Multi-system inflammation

BUN increased

b. S&S:
   i. Dermatologic: dry, scaly butterfly-rash, lesions evident with sun exposure, alopecia, nose/mouth ulcers, coin lesions, discoid rash (Malar rash)
   ii. Musculoskeletal: polyarthritis, swan neck/ulnar deviation, myalgia, risk for bone loss/fractures (Muscle pain or ache)
   iii. Cardiopulmonary: tachypnea, cough, pleurisy, dysrhythmias, pericarditis, CAD, raynauds syndrome (irritation of the nerves of the extremities (peripheral neuropathy) may produce numbness, tingling, and weakness of the hands and feet)
   iv. Neuro: generalized/focal seizures, peripheral neuropathy, brain fog (disorientation, memory deficits, psychiatric symptoms)
   v. Infection: inc susceptibility
   vi. Hematologic: formation of antibodies against blood cells – anemia, leukopenia, thrombocytopenia
   vii. General: fatigue, fever, joint/muscle pain (fever, weight loss, arthralgia, fatigue = flare up)
      1. Nursing care: monitor for s/s of a flare & emotional support for the patient and family
   viii. Kidney: early sign is proteinuria (lupus nephritis —> ESKD) (Photosensitive)
      1. Goal: slow the progression
      2. Treatment: corticosteroids, cytotoxic agent, immunosuppressive agent —> (no grapefruit juice; drugs aren't metabolized which may cause drug toxicity)
   ix. Pregnancy: infertility can result from renal involvement, high dose corticosteroids, chemo drugs (**Aspirin:** potential for tinnitus & GI bleed)

Diagnosing criteria:
- pt Hx
- PE (physical exam)
- lab findings (ANA)

c. Infection: Major cause of death with pneumonia being the most common
d. Hematologist: formation of antibodies against blood cells, RBCs, WBCs, platelets, & coagulation factors leading to anemia
e. Diagnostics: no specific tests, ANA present, hx
d. Treatment:
   i. Drug therapy: NSAIDS, antimalarial, steroid-sparing drugs, corticosteroids (**Ibuprofen:** potential for GI & renal effects, take w/ food; May use Azathioprine instead b/c steroids are harsh on the body; Immunosuppressant; Monitor for renal failure & provide pain management)
   ii. Nursing management: avoid sun exposure, use SPF (d/t photosensitivity), clean skin w/mild soaps, monitor patient's weight & I/Os if corticosteroids are prescribed d/t possible fluid retention effects of these drugs and possibility of renal failure, look for bleeding d/t drug therapy (pallor, skin bruising, petechiae, tarry stools)
      1. Acute exacerbation - continuous fatigue or fever may be an indicator

Methotrexate
- immunosuppressant may be administered to decrease the need for long term corticosteroids

e. Nursing Diagnoses: deficient knowledge, fatigue, impaired skin integrity, impaired comfort
   i. Teach the patient that a variety of factors may increase disease activity; fatigue, sun exposure, emotional stress, infection, drugs, & surgery (Focus on pt teaching)

3. HIV/AIDS (CD4 cells normal 800-1200) <500 = problems start
   a. Causes: transmitted through body fluids (blood, seem, vaginal secretions, breast milk)
      i. Seroconversion: HIV - specific antibodies develop
      ii. Chronic Asymptomatic (mononucleosis like syndrome = acute infection): CD4 above 500, flu-like symptoms, fatigue, HA, low-grade fever, night sweats, persistent generalized lymphadenopathy (PGL), & unaware of infection (Oral hairy leukoplakia & thrush)
      iii. Symptomatic: CD4 below 500, worsening symptoms, other problems develop (i.e infection)
      iv. AIDS: CD4 below 200, opportunistic infections/cancers, wasting syndrome, ADC (CDC criteria; aids dementia complex)
   b. S&S: flu-like symptoms (fever, swollen glands, sore throat, headache, malaise, nausea, muscle/joint pain, diarrhea, rash) – 2 to 4 wks after infection

Opportunistic diseases: flourish when
- pneumocystis is (fungal)
- kapoks sarcoma (neoplasm)
- TB (bacteria)

   i. Symptomatic Infection: thrush, hairy tongue, shingles, persistent yeast infections, herpes, bacterial infections, Kaposi sarcoma (skin/internal candida)

ii. AIDS: at least one of the CDC criteria must be met (CD4 T - cell counts <200):
1. Immune system severely compromised
2. Great risk for opportunities disease
a. Fungal: candidiasis, histoplasmosis, pneumonia
b. Neoplasms: Kaposi sarcoma
c. Viral: influenza, CMV, hepatitis, herpes
d. Bacterial: mycobacterium, TB
3. Possible malignancies, wanting & dementia

doesn't rise until 4 weeks after exposure

c. Diagnostics: HIV-specific antibodies, CD4 counts, viral load, CBC abnormals (neutropenia, thrombocytopenia, anemia, altered LFT, reactions to + HIV test)
d. Treatment: no cure! —> Educate pt
i. ART Antiretroviral Therapy: dec viral replication, maintain CD4 counts, prevent related S&S, delay progression, adherence is critical
ii. Vaccinations – HAV, HBV, Flu/pneumonia, PrEP
e. Health Promotion: PREVENTION! Adhere to drug regimens, abstinence, use protection/barriers, no IV drug use, prevent HIV in women, medicate HIV-infected pregnant women, prevent exposure (blood born precautions), come to terms with issues related to disease, disability, & death

Zidovudine: prevents infected moms from giving it to their babies

Neuro: **3 components of the skull**: - brain tissue - blood - cerebral spinal fluid (CSF)

1. Increased Intracranial Pressure (dec cerebral blood flow, compression of brainstem/resp center)

Normal: 5-15

a. Causes: mass lesion (brain tumor), cerebral edema (multiple causes), head injury (bleed: following surgery), brain inflammation (meningitis). metabolic insult (liver/kidney failure)
b. S&S: May present w/ a headache
i. LOC changes: - early sign (subtle changes)
1. Glascow Coma Scale: eyes, verbal, motor
a. range of 3-15; score of 3-8 indicates pt may be in a coma if pt is a 3 they're a tree (coma)

Projectile vomiting

if pt goes from 12 to 4 notify HCP!

ii. Cushings Triad: - late sign (or occurs with sudden high increase in ICP)
1. Dec pulse, irregular respirations, widening pulse pressure (decreased pulse, irregular respiration's (hypoxemia or decreased in pulse ox reading), increased pulse pressure + increased BP
iii. Fever: pressure on hypothalamus
iv. Pupils: PERRLA, ocular changes w/inc ICP, abnormal eye mvmts, papilledema
1. **ipsilateral** dilation on the same side as lesion (uncial herniation) —> medical emergency
a. one pupil dilates

Nursing Dx:
Decreased intracranial adaptive capacity

4 Assessments for ICP
1. LOC changes
2. Muscle loss
3. Vital signs
4. Pupils

Meningitis Monitoring
- stiff neck
- fever
- headach

2. Motor assessment: pronator drift, (weakness in one side —> drifts (opposite side —> counter lateral), strength (unconscious pt=dec response)
    a. BILATERAL hand grasps (equal in strength)
    b. Pupils have contra lateral changes (weakness or paralysis
vi. Posturing: decorticate (abnormal flexor [cort—> to the core]), decerebrate (extensor—>extend)
vii. Headache, vomiting (projectile)
viii. Seizures: keep patient safe, get them on their side, prevent aspiration (suction)
    1. Observation/Dox: describe activities or events leading up to seizures (aura —>smell), what it looked like, bilateral or unilateral movements, symmetrical, length

b. Complications of uncontrolled increased ICP (IICP):

Nursing Dx: Risk for ineffective cerebral tissue perfusion

i. Inadequate Cerebral Perfusion:
ii. Cerebral Herniation:
    1. Uncal Herniation: (cerebral herniation d/t uncontrolled ICP) uncal portion of temporal lobe through tentorial notch (compresses midbrain)

FYI- **Ventriculostomy** Neurosurgical procedure that involves creating a hole within a cerebra ventricle for drainage

Not on IICP!!

c. Diagnostics: CT, MRI, EEG, Lumbar Puncture — May cause more herniation
    Positioning: - left lateral - bent over (fetal position)
    i. CT - detect bleeding, brain structure shift, cerebral edema, tumors (R/O)
        1. Use w/ or w/o dye for contrast (check renal function, allergies, frequently performed daily on neuro pt's)
    ii. MRI - similar to CT but uses magnetic field instead of radiation
        1. contraindications (metal... follow protocol), pt wears ear plugs (very loud), may feel claustrophobic, may use contrast (check allergies)

Drugs: NSAIDS or codeine

d. Collaborative Care (Nursing Dx: risk for ineffective cerebral tissue perfusion)
    i. Maintain a patent airway, ICP WNL, normal fluid and electrolytes (avoid over hydration & monitor for DI), keep HOB at 30 degrees, cough PRN, encourage IS/DB — Caution any activities that may increase IIP: vomit, suctioning

- Mannitol is working when we see an increase in urine output

Foley catheter

    ii. Respiratory function: adequate O2(greater than O2), adequate CO2 ([may be 30] 30-35) maintain airway — May need ventilator
    iii. Drugs: Mannitol (IV w/filter(osmotic diuretic pulls fluid)), Hypertonic Saline (albumin) [not hypotonic because hypotonic will drive fluid back into the cells causing more ICP], Corticosteroids (for brain tumors), Barbiturates (induce coma) — Furosemide: used to decrease ICP — High dose — Colloid, treat low BP
        1. Analgesics, stool softener, anticonvulsants, PUD prophylaxis, DVT prophylaxis
    iv. Nutrition: Inc glucose, IV (we want to maintain normovolemic, give isotonic solutions) NS

Causes:
- MVA
- Falls
(males are 2x more likely to have TBI)

S/S
- LOC - amnesia
-personality changes

2. Traumatic Brain Injury (TBI) – death immediately, within 2 hrs, or 3 wks post trauma
    a. Management: Airway, C-Spine, O2, IV, control bleeding, assess for CSF, CO2 <45 if greater could = cerebral vasodilation (acid o tic may cause vasodilation as well)
    b. Ambulatory: nutrition, bowel/bladder, spasticity, dysphagia, seizures (Dilantin), personality

Acceleration: moving object hits immovable head (baseball hitting head)
Deceleration: head in motion stopes suddenly (I.e moving head hits steering wheel)

3. Other Injuries:
   a. Scalp Lacerations: minor, highly vascular = bleeding, risk for infection
   b. Management: control bleeding with steril stressing, sutured/stapled in ED, tetanus prophylaxis
   c. Skull Fractures: Linear, depressed simple, comminuted, compound
      i. Basilar: infection, CSF leak, periorbital ecchymosis, battle's sign (bruising behind ear or peri orbital edema or ecchymosis)
         - injury @ the back of head where neck connects to the skull
         raccoons eye
         - do NOT blow nose
         - suction, or pack infected ear
         l. CSF leak - otorrhea or rhinorrhea d/t dura tear
   d. Concussion: sudden transient mechanical head injury, brief disruption in LOC, amnesia, headache

Halo sign
- check for CSF leak
place drop w/ or w/o blood on white gauze
*can use glucose identifying strip

      l. Retrograde amnesia: inability to recall past memories, forgets what happened before their memory loss (before injury to disease that caused it); failure in the brain ability to retrieve information
      ii. Post-Concussion Syndrome: 2wks-2mo, persistent headache, lethargy, personality/behavior changes, dec ST memory, changes in intellectual
      iii. Home directions: supervised (24 hrs), don't drive, no alcohol, monitor for confusion, vomiting, worsening headache, changes in vision, drowsiness, motor weakness, behavior changes, seizures, no sedatives (Can go to sleep if: walking normal, PERLA & carry a convo)
   d. Contusions: bruising of brain tissue, closed head injury, coup-countercoup injury (anticoags=bad)
   e. Major Lacerations: associated intracerebral hemorrhage, surgical repair is impossible, poor prognosis
4. Hematomas
   a. Epidural Hematoma (bleed between skull/dura) – venous or **arterial** origin (emergency!)
      i. S&S: initial loss of consciousness, brief lucid followed by decreased LOC, headache, nausea, vomiting (herniation —> blood has to go somewhere)
   b. Subdural Hematoma (bleed between dura/arachnoid) – **venous** origin (slow progression)
      i. Acute: w/in 48hrs, Inc ICP, drowsiness, confusion - craniotomy
      ii. Subacute: 2-14 days, alterations in mental status – evacuate/decompress
      iii. Chronic: weeks-months after injury
   c. Intracerebral Bleed: bleeding into brain tissue, possible laceration
   d. Diagnostics: MRI, CT
5. Tumors
   a. S&S: headache, NV, papilledema, manifests based on location/size/invasion of tumor
      Personality → i. Frontal: inapp. Behavior, loss of concentration, emotional lability, inattentiveness
      Sensory & association → ii. Parietal: paresthesia, agraphia (can't write), acalculia (can't math), astereognosis (cannot recognize objects in hand)
      Vision → iii. Occipital: vision changes
      (Inner part of the brain) → iv. Lateral/Third Ventricle: inc ICP

6. **Craniotomy:** removal of part of skull
   a. Pre-op:
      i. History or physical including full nervous exam, informed consent, psycho-social care to pt & fam, potential for disability, change in physical appearance, hair loss, pt's appearance post-op
   b. Post-op:
      i. Supratentorial: HOB 30 degrees, turn side/side/back, avoid operative site
      ii. Infratentorial: keep neck straight, do not flex neck, turn side/side (pt is supine, bending knee causing back pain)
   c. Monitor for: **meningitis** (stiff neck, fever, headache, kernigs, brudzinski [nucalrigidity]), corneal reflex, dec LOC, communication deficits, motor/sensory deficits, headache, hyper/hypothermia, periocular edema, loss of pharyngeal/palatal reflexes, visual disturbances

May give **Acetaminophen** for headache

Moving neck forward brings knees up

7. **Spinal Cord Injuries** ↑ HOB = priority over F&E monitoring
   a. Causes: MVA (motor vehicle collision), falls, violence, sports — Most likely men (16 - 30 yrs old)
   b. Types:
      i. Compression: bone displacement, interruption of blood supply to cord, traction from pulling on cord
      ii. Penetrating: tearing and transection
      iii. Primary: initial mechanical disruption
         1. Secondary: ongoing and progressive damage - cascade of events cause secondary injury (hemorrhage, inflammation, edema, ischemia, hypoxia)

Nursing interventions
- q4 turns
- nutrition
- alignment
—>neutral position of neck

Methylprednisolone: use only w/ in first 8 hrs of injury —> improvement in motor and sensory function

   c. **Shock:**
      i. Spinal Shock: (below the level of injury = no reflexes) Dec reflexes, loss of sensation, flaccid paralysis below level of injury (min of 72hrs, temporary)
         1. Continue to monitor motor and sensory
      ii. Neurogenic Shock: hypotension, bradycardia, peripheral vasodilation, venous pooling, dec CO – give vasopressor, **dopamine**, T6 or higher
         1. Give **atropine**, IV fluids but want to vasopressin, **norepinephrine** to increase BP

lose sensation of SNS so PNS takes over (low & slower)

↳ To increase HR

May place temporary pacemaker

Midodrine: vasoconstriction, salt

   d. **Level of Injuries:**
      i. Cervical: tetraplegia, loss of feeling/mvmt in head/neck/shoulders/arms
      ii. Thoracic & Lumbar: paraplegia, loss of feeling/mvmt in mid chest/stomach/hips/legs
   e. **Degree of Injury:**
      i. Complete: total loss of sensory/motor function below level of injury
      ii. Incomplete: mixed loss of voluntary motor function and sensation

ASIA: classifies severity of impairment
↳A = complete
↳E= normal

   f. **Manifestations:** depends on level of injury
   g. **Diagnostics:** CT, MRI, cervical xray, comprehensive neuro exam, CT angiogram

h. Collaborative Care:

Nursing Priorities → i. Initial: airway, C-Spine, O2, IV, assess injuries, control bleeding

ii. Stabilized: immobilize, align

1. Respiratory: Above C4 = mechanical vent, adequate oxygenation, Below C4 = diaphragmatic breathing
2. Cardio: Above T6 = neurogenic shock, cardiac monitoring, peripheral vasodilation, IV fluids, vasopressor, atropine → Anticholinergic; d/t hypercoagubility ← (log roll!)
3. Peripheral: DVT prophylaxis, pulmonary embolism, ROM, Heparin (lovenox)
4. Urinary: urine retention, reflex emptying, foley ↔ intermittent program ← Increased fluid intake
5. GI: Above T5 = paralytic ileus, distention, ulcers, bleeding, reglan. Needs bowel program (rectal simulation) – can cause dec HR
   - H2-receptor blocker
   - Proton Pump Inhibitor (PPI) → PUD prophylaxis, given prophylactically to decreased the secretion of HCl acid & prevent the occurrence of ulcers during initial phase
6. Metabolic: NG suctioning (alkalosis), electrolyte imbalances, weight loss, INC nutritional needs (inc protein, high calorie)
7. Skin: prevent ulcers, reposition q2h, pressure-relieving mattress, adequate nutrition, avoid thermal injury
8. Musculo: spasms (antispasmodics) - baclofen

Injury at or above C3 = apneic

Injury at or above C4 = respiratory insufficiency

iii. **Poikilothermism**: interruption of SNS (prevents peripheral temp sensations from reaching the hypothalamus), cannot sweat nor shiver (temp regulation mimics the environment)

1. Monitor temp, maintain environmental temp, avoid exposures, cooling blanket – fever

iv. **Autonomic Dysreflexia**: stimulation of sensory receptors, intact SNS responds (Inc BP), PNS responds by Dec HR (T6 & above) ← Medical Emergency

1. S&S: sudden headache, inc BP, Dec pulse, flushed face, nasal congestion, blurred vision, anxiety, nausea – can cause seizure, stroke & death if not treated
2. Interventions: elevate HOB, alleviate cause, notify doc!
   a. Concerns: sexuality, grief/depression
   b. **Check for Bladder Distention!** → pt will need to self cath

↑45

Cervical/Thoracic injury (C5-T6) → Paralysis of abdominal/intercostal muscles → ↑Risk of aspiration

Nursing Interventions
Elevate HOB 45, NUMB before cauterization, NUMB before bowel evacuation, remove all skin stimuli, take BP when pt complains of headache

8. Kidney Transplant

a. Signs of rejection

Pre-op: dialysis may be required

i. Acute - occurs days - months after transplant (primary activation of T cells)

1. S/S: fevers, malaise, tenderness over the graft site, swelling of the grafted kidney, acute HTN, edema, oliguria, azotemia, weight gain, proteinuria, hematuria, increased BUN & Cr
2. Most common infections observed in the first month: pneumonia, wound infections, IV line & drain infections, UTI
3. **Anti-rejection medications** - monitor drug levels (many are hepatotoxic) ← **Goal:** adequately suppress immune system to maintain sufficient immunity to prevent overwhelming infection

Hyper acute: Min-hrs after transplant, Antibody-mediated, humoral rejection (rare) → remove d/t necroses & thrombosis through out the organ causing peritonitis →ischemia

ii. Chronic - process that occurs over months or years and is irreversible, gradual fibrosis of the graft

1. S/S: of CKD

b. Post-Op Care

Hyponatremia & hypokalemia →

i. Maintenance of fluid and electrolyte balance is FIRST PRIORITY

ii. Urine output replaced w/ fluids (closely measured)

iii. Acute tubular necrosis can occur (may need dialysis)

iv. Maintain catheter latency

v. Monitory electrolytes

vi. Focus on urine output & surgical complications (donor)

vii. pt will have increased UO d/t kidney's ability to filter BUN abundance of fluid during surger, initial renal tubular dysfunction

Immunosuppressive drugs

*focus on using output & surgical complications (donor)

*pt will have increased UO d/t kidneys ability to filter BUN abundance of fluid during surgery, initial renal tubular dysfunction

Lupus - Nursing Diagnosis:

Fatigue:

- assist pt in assigning priority to activities to accommodate energy levels
- assist pt to schedule rest periods to manage fatigue
- teach activity organization & time management techniques to prevent fatigue
- encourage alternate rest & activity periods to promote rehabilitation & maximum participation in activities
- instruct: recognize cues of fatigue to reduce activity as needed
- instruct: notify HCP if S/S of fatigue persist to increase pt's support & family's understand of disease & related problems

Impaired skin integrity: r/t photosensitivity, butterfly rash

- inspect skin daily to prevent skin break down
- apply anti inflammatory agent