NCLEX Prep

ACID BASES

- learn how to convert lab values to words
- the rule of the *B's*
  = if the pH and the **B**iCarb are **b**oth in the same direction -> **metabolic**
  Hint: draw arrows beside each to see directions
  * down = ***acidosis***
  * up = ***alkalosis***
  - respiratory -> has no *b* in it; if in other directions (or if bicarb is normal value)
  - **KNOW NORMAL pH, BiCarb, CO2**

- **Hint:** DO NOT MEMORIZE LISTS…know principles (they test knowledge of principles by having you generate lists..) - for "select all" questions
  - ex. in general/principle what do opioids/pain meds do? = sedate you, CNS depressors
    * ex. what does dilaudid do? *do not memorize specifics or a list of dilaudid, know principles of opioids* (such as sedation, CNS depression -> lethargy, flaccidity, reflex +1, hypo-reflexia, obtunded)
  - boards do not test by lists because all books/ classes have different lists

- **principles of S&S acid bases: *as the pH goes so goes my patient (except K+)***

  - pH up = PT up -> body system gets more irritable, hyper-excitable (EXCEPT K+)

    -> **alkalosis** - *think of a body system and go high*: hyper-reflexive (+3, +4 [2 is normal]), tachypnea, tachycardia, borborygmi, seizure
  - pH down = PT down -> body systems shut down (EXCEPT K+)
    -> **acidosis** - *think of a system and go low*: hypo-reflexive (+1, 0), bradycardia, lethargy, obtunded, paralytic illeus, respiratory arrest
- ex. which acid-base disorders need an ambu-bag at the bedside? = acidosis *(resp. arrest)*
- ex. which acid-base disorders need suction at the bedside? = alkalosis *(seize and aspirate)*
- **Mac Kussmaul** - Kussmaul's (compensatory respiratory mechanism) is only present in **only 1** of the 4 metabolic (acid-base) disorders

  * **M = metabolic AC = acidosis**

- most common mistake with select all questions = *selecting one more than you should* (stop when you select the ones you know! do not get caught up on the "could be's")
- **Hint:** do not select *none* or *all* on select all that apply questions (never only one and never all)

- **Causes of Acid-Base Imbalance:**
  - scenarios and what acid-base disorder would *result* (what would cause an imbalance)

**** DO NOT MIX UP S&S and CAUSATION**
- often what causes something is the *opposite* of the S&S
- ex. diarrhea will *cause* a metabolic acidosis but once you are acidotic your bowel shuts down and you get a paralytic illeus

- when you get scenarios:
  -> if it is a **lung** scenario = respiratory
  - then check if the patient is *over-ventilating (alkalosis)* or *under-ventilating (acidosis)*
  - remember to look at the words (ex. over, under, ventilating) -> "as the pH goes so goes my PT"
  -> VENTILATING DOES NOT MEAN RESPIRATORY RATE; resp. rate is *irrelevant* w/ acid-base, ventilation has to do with gas exchange not resp. rate (look at the SaO2 -> if your resp. rate is fast but SaO2 is low you are under-ventilating)
  -> ex. PCA pump - What acid-base disorder indicates they need to come off of it? = respiratory acidosis (resp. depression -> resp. arrest)
  —> ***if it is not lung, it is metabolic***
- **metabolic alkalosis** - really only one scenario = **if the PT has prolonged gastric vomiting/suctioning**
  - because you are ***losing ACID***
    * ex. GI surgery w/ NG tube with suctioning for 3 days; hyperemesis graviderum
  - **otherwise everything else that is not lung you pick *metabolic acidosis (DEFAULT)***
    * ex. hyperemesis graviderum w/ *dehydration* acute renal failure, infantile diarrhea

- remember, you only have 4 to pick from:
  - respiratory alkalosis
  - respiratory acidosis
  - metabolic alkalosis
  - metabolic acidosis

- pay more attention to the **modifying phrases** than the original noun
  - ex. person w/ OCD who is now psychotic (psychotic trumps OCD); hyperemesis with dehydration (pay attention to dehydration)

VENTILATION

- ventilators -> *know alarm systems* (you set it up so that the machine does not use *less than* or *more than* specific amounts of pressure)
  a) **high pressure alarm** = *increased resistance* to airflow (the machine has to push too hard to get air into lungs)
  - from **obstructions**:
  b) kinks in tubing (unkink it)
  c) water condensation in tube (empty it!)
  d) mucous secretions in the airway (change positions/turn, C&DB, *and THEN* suction)
  *** **suction is only PRN!!!**
  -> priority questions = you would check kinks first, suction is not first

b) **low pressure alarm** = *decreased resistance* to airflow (the machine had to work too little to push air into lungs)
- from **disconnections**:
i. main tubing (reconnect it duh!)
ii. O2 sensor tubing (which senses FiO2 at the airway/trach area; black coated wire coming from machine right along the tubing - reconnect!)

- **ventilators** -> know blood gases

- resp. alkalosis = ventilation settings might be set too high (OVER-VENTILATING)

- resp. acidosis = ventilation settings might be set too low (UNDER-VENTILATING)
- ex. weaning a PT off ventilator -> should not be under-ventilated, they need the ventilator; if they are over-ventilating then they can be weaned

- never pick an answer where you do not do something and someone else has to do something

ABUSE (Psych and Med-surg)

Psychological Aspect/Psycho-Dynamics

- # 1 psychological problem is the same in any/all abusive situations = **DENIAL**
  - abusers have an infinite capacity for denial so that they can continue the behavior w/o answering for it
- can use the alcoholism rules for any abuse
  - ex. # 1 psych problem in child abuse, gambling or cocaine abuse is *denial*
- *why is denial the problem? HOW CAN YOU TREAT SOMEONE WHO DENIES/DOES NOT RECOGNIZE THEY HAVE A PROBLEM*
- **denial = refusal to accept the reality of a problem**
- treat denial by CONFRONTING the problem (it is not the same as *aggression* which attacks the person, not the problem) = ***they DENY you CONFRONT***
  - pointing out to the person the difference between what they say and what they do
  - **Hint**: never pick answers that attack the person
    -> ex. bad answers have bad pronouns - "you"
    -> ex. good answers have good pronouns - "I", "we"
    -> ex. "you wrote the order wrong" vs. "I'm having difficulty interpreting what you want"
- loss and grief -> for this denial you must **SUPPORT** it
  - DABDA = denial, anger, bargaining, depression, acceptance
- **Hint:** for questions about denial, you must look to see if it is LOSS or ABUSE
  - **loss/grief = support**
  - **abuse = confront**

- #2 psychological problem in abuse = **DEPENDENCY, CO-DEPENDENCY**
  - **dependency** = when the abuser gets significant other to do things for them or make decisions for them
    -> the *dependent* = *abuser*
  - **co-dependency** = when the significant other derives positive self-esteem from making decisions for or doing things for the abuser
    -> the abuser gets a life w/o responsibilities
    -> the sig. other gets positive self-esteem (which is why they cannot get out of the relationship)
- how do you treat it?
  - **set limits and enforce them**
    -> start teaching sig. other to say NO (and they have to keep doing it)
  - must also work on the self-esteem of the co-dependent (ex. I'm a good person because I'm saying "no")
- **manipulation** = when the abuser gets the sig. other to do things for them that are not in the best interest of the sig. other
  - the nature of the act is ***dangerous/harmful***
  - how is manipulation like dependency?
    -> in both the abuser is getting the other person to do something for them
  - how do you tell the difference between manipulation & dependency?
    -> NEUTRAL vs. NEGATIVE (look at what they're being asked to do)
    -> if the sig. other is being asked to do something neutral (no harm) its dependency/co-dependency
    -> if the sig. other is being asked to do something that will harm them or is dangerous to them they are manipulated
- how do you treat manipulation?
  - set limits and enforce them -> "NO"
  - easier to treat than dependency/co-dependency because no one likes to be manipulated (no positive self-esteem issue going on)
- ex. how many PT's do you have w/ denial? = 1
  ex. how many PT's do you have w/ dependency/co-dependency = 2
  ex. how many PT's do you have w/ manipulation = 1

Alcoholism

Wernicke's & Korsakoff's

- typically separate BUT boards lumps them together
- **wernicke's = encephalopathy**
- **korsakoff's = psychosis (lose touch with reality)**
  -> tend to go together, find them in the same PT
- **Wernicke Korsakoff's syndrome**:
  a) psychosis induced by *Vit. B1 (Thiamine) deficiency*
  - lose touch w/ reality, go insane because of no B1
  b) primary symptom -> *amnesia w/ confabulation*
  - significant memory loss w/ making up stories
  - they believe their stories
- How do you deal w/ these PT's?
  - bad way = confrontation (because they believe what they are saying and cannot see reality)
  - good way = **redirection** (take what the PT cannot do and channel it into something they can do)
- **Characteristics of Wenicke Korsakoff's:**
  a) *it is preventable* = take Vit. B1 (co-enzyme needed for the metabolism of alcohol which keeps alcohol from accumulating and destroying brain cells)
  * PT does not have to stop drinking
  b) *it is arrestable* = can stop it from getting worse by taking Vit. B1
  * also not necessary to stop drinking
  c) *it is irreversible* (70% of cases) -> **Hint**: On boards, answer w/ the majority (ex. if something is majority of the time fatal, you say it is fatal even if 5% of the time it is not)
- **Drugs for Alcoholism:**
  DISULFIRAM (**Antabuse**)
  = *aversion therapy* -> want PT's to develop a gut hatred for alcohol
  -> interacts w/ alcohol in the blood to make you very ill
  -> works in theory better than in reality
  -> **onset & duration: 2 weeks** (so if you want to drink again, wait 2 weeks)

- PT teaching = avoid ALL forms of alcohol to avoid nausea, vomiting & possibly death
  -> including mouthwash, aftershaves/colognes/perfumes (topical stuff will make them nauseous), insect repellants, any OTC that ends with "-elixer", alcohol-based hand sanitizers, uncooked (no-bake) icings which have *vanilla* extract, red wine vinaigrette

- **Overdoses & Withdrawals:**
  - every *abused* drug is either an **UPPER** or **DOWNER**
    -> the other drugs do not do anything
    -> #1 abused class of drug that is not an upper or downer = laxatives in the elderly
  a) first establish if the drug is an **upper** or **downer**
  b) **uppers (5)** = caffeine, cocaine, PCP/LSD (psychedelic hallucinogens), meth*amphetamines*, **add**erol (ADD drug)
    * S&S -> make you go up; euphoria, tachycardia, restlessness, irritability, diarrhea, borborygmi, hyper-reflexia, spastic, seize (need suction)
  c) **downers** = do not memorize names -> anything that is not an upper is a downer! if you do not know what the med is, you have a high chance that it is a downer if it is not part of the uppers list
    * S&S -> make you go down; lethargy, respiratory depression (& arrest)
  d) ex. The PT is high on cocaine. What is critical to assess?
    -> NOT resps below 12 because they will be high
    -> maybe check reflexes
  b) are they talking about **overdose** or **withdrawal**
  - **overdose/intoxication** = too much
  - **withdrawal** = not enough
  - ex. the PT has overdosed on an upper -> pick the S&S of too much upper
  - ex. the PT has overdosed on a downer -> pick the S&S of too much downer
  - ex. the PT is withdrawing from an upper -> not enough upper makes everything go down
  - ex. the PT is withdrawing from a downer -> not enough downer makes everything go up
- *upper overdose looks like = downer withdrawal*
- *downer overdose looks like = upper withdrawal*
- In what 2 situations would resp. depression & arrest be your highest priority:
  - downer overdose
  - upper withdrawal
- In what 2 situations would seizure be the biggest risk:
  - upper overdose
  - downer withdrawal

- **Drug Abuse in the Newborn:**
  - always assume intoxication, **NOT** withdrawal at birth
  - after **24 hrs** -> withdrawal
  - ex. caring for infant of a Quaalude addicted mom 24 hrs. after birth, select all that apply:
    -> downer withdrawal so everything is up = exaggerated startle, seizing, high pitched/shrill cry

- **Alcohol Withdrawal Syndrome vs. Delirium Tremens**
  - they are both different! not the same
  a) *every* alcoholic goes through withdrawal **24 hrs.** after they stop drinking
    - only a *minority* get delirium tremens
    - timeframe -> 72 hrs. (alcohol withdrawal comes 1st)
    - alcohol withdrawal syndrome ALWAYS precedes delirium tremens, BUT delirium tremens does not always follow alcohol withdrawal syndrome
  b) AWS is not life-threatening; DT's can kill you
  c) PT's w/ AWS are not a danger to self/others; PT's w/ DT's are dangerous to self/others
    - they are withdrawing from a downer so they will be exhibiting upper S&S
    - DT's are dangerous

Differences in Care	AWS	DT
Diet	Regular diet	NPO/clear liquids (because of risk for seizures which can cause risk of aspiration)
Room	Semi-private anywhere on the unit	Private near nurses station (dangerous & unstable)
Ambulation	Up ad lib	Restricted bed rest -> no bathroom privileges (use bedpans/urinals)
Restraints	No restraints (because not dangerous)	Restraints (because dangerous) - not soft wrist or 4 point soft because they'll get out - need to be in vest or 2-pt. locked leathers (opposite 1 arm & leg, rotate Q2hrs, lock the free limbs 1st before releasing the locked ones)
	They both get ANTI-HYPERTENSIVES & TRANQUILIZERS - because everything is up (downer withdrawal) They both get MULTIVITAMIN w/ **B1**	

- RN's can accept but LPN's cannot (because PT is unstable)
  - on med-surg, the RN who takes them must decrease their workload (i.e. reduce PT load if they take a DT PT)
    -> **Hint:** on boards, the setting is always perfect (i.e. enough staff/time/resources on the unit etc.)

DRUGS

AMINOGLYCOCIDES

- powerful class of **antibiotics** (when nothing else works pull these outs, the big guns)
  - do not use unless anything else works
- *boards love to test these drugs because they're dangerous and are a test of safety*
- think: **A MEAN OLD MYCIN**
  -> *a mean old* = they treat serious, life-threatening, resistant, Gram-neg bacteria infections (i.e. *a mean old* antibiotic for *a mean old* infection*)*
  -> *mycin* = what they end with (**all** end w/ -mycin)
  ** not all -mycin's are aminoglycosides BUT most are (the 3 that are not are ery**thro**mycin, azi**thro**mycin, clari**thro**mycin = *throw it off the list!*)

- 2 toxic effects:
  i) when you see '-mycin', think **mice**
  - **mice** -> **ears** -> **otto toxic**
  - monitor hearing, tinnitus, vertigo/dizziness
  ii) the human **ear is shaped like a *kidney*** so next effect is **nephrotoxicity**
  - monitor *creatinine* (not BUN, output, daily weight)
    * **creatinine** = the best indicator of kidney/renal function (pick 24 hr. creatinine clearance over serum creatinine if both available)
- #8 (fits nicely in the kidney) reminds you about 2 things about these drugs
  - toxic to cranial nerve 8 = ear nerve
  - administer Q8
- route:
  - IM or IV
- **do not give PO -> they are not absorbed**
  - if you give an oral '-mycin' it will go into gut, dissolve, go through and come out as expensive stool (will not have any systemic effect)
  - EXCEPT in 2 cases = **bowel sterilizers**:
    * *hepatic encephalopathy (hepatic coma)* = to get ammonia down, oral '-mycin's' will sterilize the bowel by killing Gram-neg bacteria (E. coli) to help bring down ammonia and will not harm the damaged liver because it does not go through the liver (also gives diarrhea, more poop out is good)
    * *pre-op bowel surgery* = it sterilizes the gut by killing the E. coli bacteria
  - if oral, no otto or nephro toxicity because not absorbed
  - these are **neomycin** & **kanamycin**
    Who can sterilize my bowels? NEO KAN

- **Trough and Peak levels:**
  - **trough** = drug at *lowest*
  - **peak** = drug at *highest*
  ** *TAP levels* - trough administer peak
  -> draw trough levels first
  -> administer your drug
  -> draw peak levels after drug administration

- Why draw levels? = **narrow therapeutic window**

  - small difference between what works and what kills
  - if the drug has a wide range then you will not need to draw TAP levels
    * ex. Lasix doses range from 5-80mg thus a wide range so you will not need TAP levels
    * ex. Dig doses range from 0.125 - 0.25 so this narrow range needs TAPS levels
- A MEAN OLD MYCINS = major class that needs TAPs drawn because of narrow window
- When do you draw TAPS?
  -> depends on the **route** (do not focus on the med)
  a) **Trough Levels**
  ** does not matter which route or med, always 30 mins.
  a. sublingual = 30 mins. before next dose
  b. IV = 30 mins. before next dose
  c. IM = 30 mins. before next dose
  d. Sub-Q = 30 mins. before next dose
  e. PO = 30 mins. before next dose

  b) **Peak Levels**
  ** different but depends on the **route** (not the med)
  - Sublingual = 5-10 mins after drug is dissolved
  - IV = 15-30 mins after drugs is *finished infusing*
    * **Hint:** if you get two values that are correct (i.e. a 15 min. answer and a 30 min. one) *pick the highest without going over* so 30 mins.
  - IM = 30-60 mins. after administration
  - Sub-Q = SEE (see diabetes lecture -> because the **only Sub-Q peaks are Insulins**)
  - PO = forget about it, too variable so not tested

The BIG 10 Drugs to Know:
1. psych drugs
2. insulins
3. anti-coagulants
4. digitalis
5. aminoglycosides
6. steroids
7. calcium-channel blockers
8. beta-blockers
9. pain meds
10. OB drugs

Cardiac **DRUGS**

CALCIUM-CHANNEL BLOCKERS

Calcium-Channel Blockers are like Valium for your heart

- Valium -> calm's you down; so CCB's calm your heart down (ex. if tachycardic, give CCB's but not in shock)
  - to REST YOUR HEART
  - not stimulants
- calcium-channel blockers are **negative inotropic**, **chronotropic**, & **dromotropic** drugs
  - fancy way of saying that they calm the heart down

	POSITIVE	NEGATIVE
Inotropes	Cardiac Stimulants - stimulate, speed up the heart	Cardiac Depressants - calm the heart down, weaken & slow down
Chronotropes		
Dromotopes		

- When do you want to "depress" the heart? **What do CCB's treat?**
  A: anti-hypertensives
  - relax heart & blood vessels to bring down BP
  AA: anti-angina's
  - relax heart to use less O2 to make angina go away
  - treats angina by addressing oxygen demand
  AAA: anti-atrial arrhythmia
  - ex. atrial flutter, A-fib, premature atrial contractions
  - never ventricular
  *** what about *supra-ventricular tachycardia*??
  -> because it means 'above the ventricles' (which are the atria)
- Side-Effects:
  H & H = headache & hypotension
  -> hypoTN - from relaxed heart & vessels
  -> headache - vasodilation to brain
  ** **Hint:** headache is a good thing to select for 'select all that apply' questions (ex. low Na & high Na = headache, high & low glucose = headache, high & low BP = headache)

- **Names of Calcium-Channel Blockers:**
  - anything ending in **'-dipine'**
  - ex. amlodipine, nifedipine
  - *NOT just '-pine'*
  - also includes: **VERAPAMIL** & **CARDIZEM**
  - which can be given as continuous IV drip??
    = Cardizem
- *What VS needs to be assessed before giving a CCB?*
  - BP = because of risk of *hypoTN*
  -> parameters/guidelines - hold CCB if *systolic* is under 100
  -> so you need to monitor BP if PT is on a Cardizem continuous drip (if it is under 100 then you may have to stop or change the drip rate)

CARDIAC-ARRYTHMIAS

- **Interpreting Rhythm Strips** (4 that need to be known by sight):
  a) Normal Sinus Rhythm
  = P wave before every QRS & followed by a T wave for every single complex
  -> all P wave peaks are equally distant from each other, QRS evenly spaced
  b) V-Fib = chaotic squiggly line, no pattern
  c) V-Tach = sharp peaks, has a pattern
  d) A-Systole = flat-line

- Terminology:
  - if **QRS depolarization**, it is talking about **ventricular** (so rule out anything atrial)
  - if it says **P-wave** then it is talking about **atrial**

- **6 Rhythms most tested on N-CLEX:**
  1. **"a lack of QRS's" = A-systole**
     - flat-line, no QRS
  2. "P-wave" = Atrial
     - if it is a *sawtooth wave*, always pick *atrial flutter*
  3. "chaotic" - A-fib if w/ P-wave
  4. "chaotic" - V-fib if w/ QRS
     - **Hint:** the word 'chaos' is used for *fibrillation*
  5. "bizarre" = atrial tachycardia if w/ P-wave
  6. "bizarre" = ventricular tachycardia if w/ QRS
     - **Hint**: the work 'bizarre' is used for *tachycardias*
- **PVC's** (premature ventricular contractions)
  = a.k.a. periodic wide bizarre QRS
  - *ventricular because QRS*
  - bizarre -> tachycardia
  - *you can call a group of PVC's a short run of V-tach*
  - do Physician's care about PT's having PVC's?
    -> **NO, not a high priority = low priority**
    -> 3 circumstances when you could elevate these PT's to *moderate* priority (never reach high)
    i. if there are more than 6 PVC's in a minute
    ii. if there are more than 6 PVC's in a row
    iii. if the PVC fall on the T-wave of the previous beat (R on T phenomenon)
    -> most common order if you call the MD about a PT w/ PVC's = D/C monitor (because then you cannot see the PVC's and then you will not call them)
- **Lethal Arrhythmia's:**
  - HIGH PRIORITY, 2 main ones (will kill you in 8 mins or less) -> these PT's will probably be top priorities
  a) **A-Systole**
  b) **V-Fib**
  ** both have in common = **no cardiac output**
  -> no brain perfusion (and you'll be dead in *8 mins*)
- **V-tach** = *potentially* life-threatening (but not actually life-threatening), but still makes it a fairly high priority
  - difference is that these PT's have cardiac output
- in codes, even if the rhythm changes, if there is no cardiac output it is just as bad as the previous rhythm

- **Treatment (more drugs):**
  a) **PVC's** b) **V-tach**
  = for *ventricular* use **LIDOCAINE/AMIODARONE**
  * in rural areas more Lidocaine use (cheaper & longer shelf-life)
  c) **Supra-Ventricular Arrhythmia's**
  = ***atrial*** *arrhythmia's use ABCD's*
  - **A** -> **ADENOCARD (Adenosine)**
    - have to push in less than 8 seconds (FAST IV push) -> slam this drug, followed by a flush; use a big vein; BUT the problem w/ slamming it fast is the risk of PT going into A-Systole (for 30 seconds but they *will* come out of it so do not worry [unless longer than 30 sec…])
  ** for IV pushes: *when you do not know you go slow*
  - **B** -> **BETA-BLOCKERS**
    - *all end in '-lol'*
    - every '-lol' is a BB & every BB is a '-lol'
    - are negative inotropes, chronotropes, & dromotropes like calcium-channel blockers (a.k.a. valium for your heart so they treat A, AA, AAA & have same side-effects)
      ** generally speaking, do not make a big difference between Beta- & Calcium channel blockers; except that CCB are better for PT's w/ asthma or COPD -> Beta-B's bronchoconstrict
  - **C** -> **CALCIUM-CHANNEL BLOCKERS**
    - see Beta-Blockers & CCB's earlier
  - **D** -> **DIGITALIS (DIGOXIN, LANOXIN)**
  d) **V-Fib**
  = *for V-fib you D-fib* (shock them!)
  e) **A-Systole**
  = use **EPINEPHRINE & ATROPINE** (in this order!)
  -> if epinephrine does not work then use atropine

CHEST TUBES

- **purpose is to *re-establish negative pressure* in the pleural space** (so that the lung expands when the chest wall moves)
  - pleural space -> *negative is good* (negative pressure makes things stick together)
  - ex. gun shot to the lung add positive pressure
- **Hint:** when you get a chest tube question, look at the ***reason*** *for which it was placed* (will tell you what to expect & what not to expect)
  - ex. pneumothorax = to remove air (because air created the positive pressure)
  - ex. hemothorax = to remove blood
  - ex. pneumohemothorax = to remove blood & air
- **Hint:** Also, pay attention to the ***location*** *of the tubes*:
  a) **Apical** = the chest tube is way up high, thus it is *removing **air*** (because air rises)
  b) ex. it is bad if you are apical tube is draining 200 mL or it is not bubbling
  b) **Basilar** = at the bottom of the lungs, thus it is *removing **blood***/liquid (because of gravity)
  - ex. it is bad if your basilar tube is bubbling or not draining any mL
- *ex. How many chest tubes & where would you place them for a unilateral pneumohemothorax?*
  - 2 chest tubes (apical for pneumo, basilar for hemo)
- *ex. How many chest tubes & where would you place them for a bi-lateral pneumothorax?*
  - 2 tubes (apical on left, apical on right)
- *ex. How many chest tubes & where would place them for post-op chest surgery?*
  - 2 tubes (apical & basilar on the side of the surgery)
    ** you are to assume that chest surgery/trauma is unilateral *unless* otherwise specified (**they will say bilateral**)
- **Trick Question:** How many chest tubes would you need and where would you place them for a post-op right pneumonectomy?
  - NONE! because you are removing the lung so you do not need to re-establish any pressure (there is not pleural space)!

Troubleshooting Chest Tubes:

- **What do you do if you knock over the plastic containers that certain tubes are attached to?**
  -> set it back up & have PT take some deep breaths
  -> *NOT a medical emergency!* (do not call MD)
- **What do you do if the water seal breaks (the actual device breaks?)**
  -> first = **CLAMP it!!!** because now positive pressure can get in! do not let anything get in
  -> 2nd = cut the tube away from the broken device
  -> 3rd = stick that open end into sterile water
  -> then unclamp it because you've re-established the water seal (does not need clamp if it is under water *** better for the tube to be under water than clamped! -> air cannot go in and stuff can still keep coming out (if clamped, nothing can come out which is what the tube is for)
- Ex. If they ask what the *first* thing is to do if the seal breaks -> Clamp! BUT, if they ask what's the *best* thing to do -> put end of tube under water! (because it actually solves the problem, clamping is a temp. fix)
- **Hint: *'BEST' vs. 'FIRST' questions***
  - *first questions* = are about what order
  - *best questions* = what's the one thing you would do if you could *only do 1* of the options
  -> ex. You notice the PT has V-fib on the monitor. You run to the room and they are non-responsive with no pulse. What is the *first* thing you do?
  A) place a backboard?
  B) begin chest compressions?
  - *"first"* is about order so = pick A (because you will not start chest compressions first)
  - BUT, if the question ask "What's the *best* thing to do?" -> you only get to do 1 thing not the other so you would pick B

- **What do you do if the chest tube gets pulled out?**
  - *first* = take a gloved hand and cover the hole
  - *best* = cover the hole with vaseline gauze
- **Bubbling chest tubes:** (ask yourself 2 questions)
  a) Where is it bubbling?
  b) When is it bubbling?
  = the answer will depend on these 2 questions (sometimes bubbling is good, sometimes bad but depends on where & when)
  - ex. *Intermittent bubbling in the water seal -> GOOD* (document it, ***never bad!***)
  - ex. *Continuous bubbling in the water seal -> BAD* (you do not want this, means a leak in the system that you need to find and tape it until it stops leaking) ** in LPN scope
  - ex. I*ntermittent in suction control chamber -> BAD* (means suction is not high enough, turn it up on the wall until bubbling is continuous)
  - ex. *Continuous in suction control chamber -> GOOD* (document it)
  - **Hint:** both locations are opposites of each other (memorize one & deduce the others)
    —> if there is a seal it should not be continuous (ex. a sealed bottle of pop continuously bubbling means it is leaking!)

- **A straight catheter is to a foley catheter as a thoracentesis is to a chest tube.**
  - in-&-out vs. continuous secured
  - thoracentesis -> also helps re-establish neg. pressure (in-&-out chest tube)
  - higher risk for infections are continuous

Rules for Clamping Tubes:

- a) **Never clamp a tube for more than *15 seconds* without a doctors order.**
  - so if you break the water seal -> you have 15 seconds to get that tube under water
- b) **Use *rubber-tipped* doubled clamps.**
  - the teeth of the clamp need to be covered w/ rubber so that you do not puncture the tube

CONGENITAL HEART DEFECTS

- **every congenital heart defect is either TROUBLE or NO TROUBLE (ALL BAD or NO BAD)**
  - either causes a lot of problems or it is no big deal (*no in-between defect*)
- memorize one word: **TRouBLe**

Heart Defects	TRouBLe (95% of all heart defects)	No Trouble
Surgery	NEED surgery now to live	- do not need surgery right away; possibly need it years later if it causes a *Trouble* (but we do not expect it to)
Growth & Dev.	slow, delayed	normal
Life Expectancy	short	normal
Parent's Experiencing	grief, stress, financial issues, lots of caregiving issues	regular average person issues
Going Home	apnea monitor	no apnea monitor
Hospital Stay at Birth	weeks	24-48 hours
Who Follows Your Care	pediatric Cardiologist	pediatrician, pediatric NP
Shunting	R to L (T**R**ouB**L**e)	L to R
Cyanosis	Cyanotic -> Blue (TRou**B**Le)	Acyanotic

- ex. You are teaching the parents about a heart defect:
  - pick all the options that cause *trouble*
- **Hint:** Boards will not give pictures of defects and ask you what they are.
  - not our job, we do not diagnose
  - our role is teaching parents the implications
    -> so if it is trouble = teach them things that it is going to be a lot of trouble
    -> if it is not trouble = pick the things saying it is not going to be trouble

- There are 40+ congenital heart defects so just remember TRouBLe (do not memorize all of them!):
  - **Hint:** all congenital heart defects that start w/ the **letter T** are *Trouble Defects*
  - *we do not care about the defect, we care about what we're teaching the parents*
- All congenital heart defect kids (trouble or no trouble) will have 2 things:
  a) **Murmur**
  b) why? = because of the shunting of the blood (regardless of direction of shunt)
  b) all have an **Echocardiogram** done (to find out what the defect is or why there's a murmur)
- **4 Defects of Tetralogy of Fallout:**
  - **V**arie**D** **P**icture**S** **O**f **A** **R**anc**H** (or Valentines Day Pick Someone Out A Red Heart)
  1. **VD** = ventricular defect
  2. **PS** = pulmonary stenosis
  3. **OA** = overriding aorta
  4. **RH** = right hypertrophy
- do not have to *recall* these, RECOGNIZE them
  - recall -> remember from nothing
  - RECOGNIZE -> spot it when you see it (use the initials to recognize them in questions)
- ONLY DEFECT where they ask you *what* it is

INFECTIOUS DISEASE and TRANSMISSION BASED PRECAUTIONS (Isolations)

- Standard
- **Universal**
- **Contact**
  - for anything **enteric** = can be caught from *intestine*
    -> fecal, oral
  - **C-Diff, Hep. A, Cholera, Dysentery**
    * things with bugs in diarrhea
    * Hint for Hep A & B: Hep A -> think anus, Hep B -> think blood (anything from the *bowel* starts w/ a vowel)
  - **Staph infections**
  - **RSV** = *respiratory syncytial virus* (what babies, 1-2 yr. old's get that is not dangerous to adults but can be fatal for them)
    * transmitted by droplet *BUT still put them on contact precautions because little kids catch it from touching things* that other sick kids touched
  - **Herpes infections** (includes Shingles -> *Herpes* Zoster virus even though caused by varicella)
  - What's involved in contact precautions?
    -> private room is *preferred* (but not required)
      * or 2 RSV kids in the same room
      * keep RSV kid & *suspected* RSV separate because you need positive cultures (not based on symptoms)
    -> **NO:** mask, eye/face shield (unless for universal), special filter mask, PT mask, neg. air flow
    -> **YES:** gloves, gown, hand-washing, special supplies & dedicated equipment (includes toys)

  ** disposable supply vs. dedicated equipment:
  - thermometer cover - BP cuff that stays in room
- **Droplet**
  - for bugs that travel 3 feet on large particles due to sneezing/coughing
  - all **meningitis**
    * cultured through lumbar puncture
  - **H Flu (haemophilus influenza B)** -> commonly causes *epiglotitis*
    * never stick something down throat because it will cause obstruction
  - What's involved in droplet precautions?
    -> private room is *preferred* (but not required)
      * on boards select private
      * can also cohort based on positive cultures
    -> **NO:** gown, eye/face shield, special filter mask, neg. air flow
    -> **YES:** mask, gloves, hand-washing, PT worn mask (when leaving room), disposable supplies & dedicated equipment
- **Airborne**
  - **M-M-R; TB; varicella (chicken pox)**
  - What's involved in airborne precautions?
    -> private room is *required*
      * unless co-horting
    -> NO: gown (mostly for contact), eye/face shields
    -> YES: mask, gloves, hand-washing, special-filter mask ONLY for TB, PT mask for leaving room (but really should not be leaving), neg. air flow

  ** disposable supplies & dedicated equipment is a good thing but not really as essential as in the other 2 (can let this one slide)
  -> TB: technically transmitted via droplet *BUT* put on airborne

- **PPE = Personal Protective Equipment**
  - boards like to test how you put on or take off
  - always **take it off** in alphabetical order
    -> ex. gloves, goggles, gown, mask
  - **putting on** is reverse alphabetically for the 'g's' & mask comes 2nd
    -> gown, mask, goggles, gloves

CRUTCHES, CANES, WALKERS

- major area of human function is *locomotion* so they test these even though not a major emphasis in school
  - area to test PT teaching & risk reduction

Crutches:

- How do you **measure crutches**?
  ** need to know for risk reduction -> so you do not cause nerve damage
  a) **length of crutch** = 2-3 finger-widths below anterior axillary fold to a point lateral to & slightly in front of the foot
  -> many questions ask where you measure from/to (so for crutches, if they ask anything measuring from axilla to foot -> rule out, they're wrong instructions for length)
  b) **hand grip** = can be adjusted up & down; when properly placed, should be *apx. 30 degrees elbow flexion*
- How to teach **crutch gaits** (4 kinds):
  ** names are pretty obvious w/ a few exceptions
  a) **2-point**
  - move *a crutch and opposite foot* together followed by other crutch & opposite foot
  - moving 2 things together
  b) **3-point**
  - moving *2 crutches & the bad leg* together
  - moving 3 things together
  c) **4-point**
  - moving *everything separately*
  - move any crutch, then opposite foot, followed by next crutch then other foot
  - very slow but very stable
  d) **Swing-through**
  - for *non-weight bearing* injuries (ex. amputations)
  - plant crutches and swing the injured limb through (never touches down)
- When do they use them?
  - ask yourself "how many legs are affected?"
  - **even for even, odd for odd**
    * even point gaits when a weakness is evenly distributed (i.e. even # of legs messed up)
    - 2-point = *mild* problems (bilateral)
    - 4-point = *severe* problems (severe, bilateral weaknesses)
    - 3-point = *only odd one*, when only 1 leg is affected
- Ex. *Early stages of rheumatoid arthritis* = 2-point
  Ex. *Left, above the knee amputation* = swing-through
  Ex. *First day post-op right knee replacement, partial weight-bearing allowed* = 3-point
  Ex. *Advanced stages of ALS* = 4-point
  Ex. *Left hip replacement, 2nd day post-op, non weight-bearing* = swing-through
  Ex. *Bilateral total knee replacement, 1st day post-op, weight-bearing allowed* = 4-point
  Ex. *Bilateral total knee replacement, 3 weeks post-op* = 2 point
- Going up & down stairs:
  - **up with the good, down with bad**
  - crutches move with the bad leg

Cains:

- hold the cain on the ***strong side***
  - a lot of people use it the wrong way

Walkers:

- **pick it up, set it down, walk to it**
- if they *must* tie their belongings to the walker, tie it at the sides, not the front
  - boards does not like things on the front (even though most people do that anyways; they do not like wheels or tennis ball on the bottom either)

DELUSIONS, HALLUCINATIONS, & ILLUSIONS (Psych)

~~Neurosis~~ Non-Psychotic vs. Psychosis

- **Hint:** the ***first thing*** you have to do to get a psych questions correct is decide: "**Is my PT non-psychotic or psychotic?**"
  = this will determine treatment, goals, prognosis, medication, length of stay, legalities…everything

	NON-PSYCHOTIC	PSYCHOTIC
Definition	Has **insight** & is **reality-based** - even w/ emotional distress/illness, mental/behavioral disorder - recognize what the problem is and how it affects their life	Has **no insight** & is **not reality-based** - do not think/know their sick - think everyone else has the problem but not them (blame anyone else) - even if they say they're sick but then they say the martians made them sick they do not have insight
Treatment/ Techniques	- good therapeutic communication (like any PT that displays good comm. skills) ** there's nothing special that you need to do/know compared to any med-surg, peds, or OB PT	- good therapeutic communication does not work because they are not rational - need unique, specific strategies
Symptoms	do not have delusions, hallucinations, or illusions	DELUSIONS, HALLUCINATION, ILLUSIONS - only in psychotic PT's - as soon as they get any of these they've crossed the line to being psychotic

Psychotic Symptoms:

- a) **Delusions**
  = false, fixed, idea or belief; *no sensory component* (all in the brain, thinking it)
  i. **Paranoid Delusions** -> people are out to harm me
  - ex. the mafia are out to get me
  ii. **Grandiose Delusions** -> you are superior or you are the world's smartest/greatest person
  - ex. thinking you are Christ, Genghis Khan
  iii. **Somatic Delusions** -> about a body part
  - ex. x-ray vision; there are worms in my body
- b) **Hallucinations**
  = a false, fixed, *sensory* experience (purely sensory); 5 senses so 5 for (1 for each sense)
  i. **Auditory** -> hearing things that aren't there (primarily voices telling you to hurt yourself); most common
  ii. **Visual** -> seeing; 2nd most common
  iii. **Tactile** -> feeling things; 3rd most common
  iv. **Gustatory** -> tasting things that are not there
  v. **Olfactory** -> smelling things that are not there
  *** last 2 are relatively rare
- c) **Illusions**
  = *misinterpretation of reality*; *sensory* experience
  - difference from hallucination -> with an illusion there is a *referent in reality*
  -> **referent** = something in reality to which a person refers when they say something (they just misinterpret it)
- ex. *PT says: "I hear demon voices"* -> hallucination
  ex. *PT overhears nurses & MD's laughing & talking at the nurse's station & says: "Listen, I hear demon voices"* -> illusion (there is a referent)
  ex. *person staring at a wall & says: "I see a bomb"* -> hallucination
  ex. *person looks at fire extinguisher on the wall and says: "I see a bomb"* -> illusion (referent)
- **Hint:** On the test, they will tell you that there is something there thus, you can differentiate between a hallucination & an illusion.

How do you deal with these Psychotic Symptoms?

- first thing you ask after determining if PT is psychotic: What is their problem?
  —> **what kind of psychosis do they have?**

- **3 Types of Psychosis:**

1. **Functional Psychosis**
   i. *can function in everyday life* (i.e. have jobs, a marriage, etc.)
   4 diseases: **Schizo Schizo Major Manics**
   i. **Schizophrenia**
   ii. **Schizoaffective Disorder**
   iii. **Major Depression** (if it is major, test will say)
   iv. **Manic (Acute)**

   -> so bi-polar is functional, only psychotic during manic phase

- **these PT's have the potential to learn reality (because no damage)**
  -> may need meds or set boundaries for structure -> **nurse role** = teach reality (4 steps)
  a) ***acknowledge feeling*** -> "I see you are angry; "You seem upset", "Tell me how you are feeling", often uses the word feeling or shows a feeling
  b) ***PRESENT REALITY*** -> "I know that those voices are real to you but I do not hear them" or telling them what is real ("I'm a nurse & this is a hospital")
  c) ***set a limit*** -> "That topic/behavior is off-limits", "We are not going to talk about that right now", "Stop talking about that"
  d) ***enforce the limit*** -> "I see you are too ill to stay reality based so our convo is over" (ending the conversation NOT taking away a privilege [i.e. punishment]; continuing to talk may enforce the non-reality)
  *** on the test, they will not ask these specific steps but instead, will ask "how should the nurse respond…"
  *** try to pick the more **positive statements** (i.e. what they can have/do, not what they can't); if between 2 statements go w/ the positive one

- 2. **Psychosis of Dementia**
  - psychosis because of *actual damage to the brain*
  * in Functional Dementia, there is no brain damage; it is just messed up chemicals
  - include PT's w/ Alzeimer's, psychosis after a stroke, organic brain syndrome; anything w/ "senile" or "dementia"
  - **cannot learn reality**
  -> major difference from functional (which is why you have to determine type of psychosis)

-> **nurse role:**
a) ***acknowledge feeling***
b) ***REDIRECT them*** -> from something they cannot do to something they can do
** you do not set-limits because it is mean
** NOT APPROPRIATE to present reality to these PT's when they are experiencing psychotic symptoms (BUT do not confuse this w/ **reality orientation**)
-> important to remember that forgetting things (like where they are or what room they're in - PT's w/ dementia/Alzheimers) is NOT psychosis
** when they start having delusions, hallucinations or illusions, then they are psychotic
-> **reality orientation** = telling them person, place, and time (ALWAYS APPROPRIATE w/ DEMENTIA) - this deals w/ memory

3. **Psychotic Delirium**
= a *temporary*, sudden, dramatic, episodic, *secondary* loss of reality; usually due to some *chemical imbalance* in the body
* different because it is temporary and very acute
-> include PT's that are short-term psychotic because of something else causing the psychosis
- ex. a drug reaction, high on uppers or withdrawing from downers (delirium tremens), cocaine overdose, post-op psychosis (withdrawing from a downer), ICU psychosis (sensory deprivation), UTI (or any occult infection), thyroid storm, adrenal crisis
- good thing is it is temporary so focus is **removing the underlying cause & keeping them safe** -> **nurse role:**
a) ***acknowledge feeling***
b) ***REASSURE them:*** it is temp. & they'll be safe ** do not present reality -> they will not get it ** do not redirect -> not going to work

- Personality Disorders are different:
A = antisocial
B = borderline
N = narcissistic
** very sick personality disorders
** may be good to use Functional Psychosis techniques because you set limits

Other Psychotic Symptoms:

- **Loosening of Association**
= your thoughts aren't wrapped too tight, all over the map
a) **Flight of Ideas**
- coherent phrases but the phrases are not connected (not coherent together)
b) **Word Salad**
- sicker, cannot even make a coherent phrase -> babble random words
c) **Neologism**
- making up imaginary words

- **Narrowed Self Concept**
= when a *psychotic* refuses to leave their room or change their clothes
- functional psychotic
- #1 reason is because their definition of self is narrowed -> defined self based on 2 things:
i. Where they are
ii. What they are wearing
*** *so they do not know who they are unless they are wearing those exact clothes in that exact room*
- as the nurse, do not make them change or leave the room (will cause escalating panic because they will lose their concept of self)
* use the Functional Psychosis techniques
- **Ideas of Reference**
= think everyone is talking about you
- ex. see someone on the news and get upset because you think they are talking about you
- can have both *paranoia* & ideas of reference (paranoia if also think they are going to harm you)

DIABETES

- definition = **an error of glucose metabolism**
  - causes issues because *glucose* is the primary fuel source and if your body cannot metabolize glucose, cells will die
- does *not* include ***diabetes insipidus*** = polyuria, polydipsia leading to *dehydration* due to **low ADH**
  -> it is just similar with the fluids, not the glucose part (similar symptoms)
  - opposite syndromes of diabetes i. = SIADH
- relationship between **amount of urine** & **specific gravity of urine**:
  - they are opposites/inverse
  - i.e. the less urine out, the higher the specific gravity; the more urine out, the lower the specific gravity
    * so **diabetes** = has more urine & low specific gravity (opposite with SIADH)

TYPE I vs. TYPE II:

Differences	TYPE 1 DM	TYPE 2 DM
Names	- Insulin dependent - Juvenile onset - Ketosis prone	- Non-insulin dependent - Adult-onset - Non-ketosis prone
S&S	- polyuria - polydipsia - polyphagia (increased swallowing, but in context of DM it also relates to eating)	- same
Treatment	**D** = diet —> least important (less restrictions than before) **I** = insulin —> MOST IMPORTANT **E** = exercise	**D** = diet —> MOST IMPORTANT **O** = oral hypoglycemic (pills) **A** = activity

Diet:

- primarily Type II
- a) It is a calorie restriction.
  - tells you that calorie's are important because the diet's are named (ex. 1500 calorie…)
    *** **this is the *best* strategy for them**
- b) They need 6 small feedings a day.
  - keeps blood sugar levels more normoglycemic throughout the day instead of 3 big peaks

Insulin:

- *lowers* blood glucose
- 4 main types you really need to know:

1. **Regular Insulins** -> the "R" is important
   - ex. Humulin R, Novalin R
   - onset = 1 hr.
   - **peak = 2 hrs.**
   - duration = 4 hrs.
   - is clear (solution) so it can be **IV dripped** (this is the one used if using IV's)
   - *short, **rapid** acting* insulin (but Hesi will call it intermediate because we now have *Lispro* which acts faster)

2. **N** P H
   - true ***intermediate** acting* insulin
   - onset = 6 hrs.
   - **peak = 8-10 hrs.**
   - duration = 12 hrs.
   - is cloudy (suspension)
     * the issue w/ suspensions is that it precipitates -> the particles fall to the bottom over time so you CANNOT give via IV (or the PT will overdose & the brain will die)
     * **Hint:** general rule => **never put anything cloudy in an IV bag**

3. **Lispro (Humalog)**
   - ***fastest** acting, rapid*
   - onset = 15 mins.
   - **peak = 30 mins.**
   - duration = 3 hrs.
   - you give this as they being to eat so with meals (*not* ac) -> interrupt them while eating!

4. **Lantus (Glargine)**
   - ***long** acting*
   - **peak = no essential peak because it is so slowly absorbed** -> thus, little to no risk for hypoglycemia
   - duration = 12-24 hrs.
   - only insulin you can safely & routinely give at bedtime because it will not cause them to go hypoglycemic during the night (YOU CANNOT ROUTINELY GIVE THE OTHERS AT BEDTIME)

** **Hint:** boards likes to test peaks & tend to test it by giving you a time when insulin was given & asking when they reach hypoglycemia (which is the peak).

- CHECK **EXPIRY DATES** ON INSULIN!!!
  - What action by the nurse invalidates the manufacturer's expiration date? = *opening it*
    -> the minute you open it the date is irrelevant because now you have **30 days from opening** (have to write the date of opening & new expiry)
  - refrigeration is optional in the hospital BUT you need to teach PT's to refrigerate at home
    -> though at the hospital the ones that should be refrigerated should be the *un-opened vials*
  - *better to give warm, non-expired insulin than cold, expired insulin*

Exercise:

- ***exercise potentiates insulin***
  = meaning, it does the same thing as insulin
  —> think of exercise as another shot of insulin
  - if you have more exercise during the day, you need less insulin shots (and bring easily metabolized carbs/snacks to sports games)

Sick Days:

- **when a pt. w/ DM is sick -> GLUCOSE GOES UP**

  - need to take their insulin *even if they're not eating*
- need to take sips of water because diabetics get *dehydrated*
- **any sick diabetic is going to have the 2 problems of hyperglycemia & dehydration -> ALWAYS!**
- stay as active as possible because it helps lower glucose (even if they're not eating when sick)

Complications of Diabetes:

= 3 acute and a boatload of chronics

ACUTE

- **1. Low Blood Glucose (in *both* types)**
  - a.k.a. insulin shock, insulin reaction, hypoglycemia, hypoglycemic shock
  - *What causes this?*
    -> not enough food
    -> **too much insulin/medication** (primary cause)
    -> too much exercise
  - the danger is brain damage which becomes permanent (so be careful not overmedicate!)
  - **S & S:**
    -> ***drunk in shock***
    = think of how people look while drunk -> slurring, staggering, impaired judgement, delayed reaction time, labile (emotions all over)
    ** from cerebrocortical compromise
    = shock -> low BP, tachycardia, tachypnea, cold/pale/clammy skin, mottled extremities
    ** from vasomotor compromise
  - **Treatment:**
    a) Administer rapidly metabolizable carbohydrate (i.e. sugars)
    -> ex. *any* juice, reg. pop, chewable candy, milk, honey, icing, jam
    b) BUT combine/follow w/ a starch or protein
    -> ex. cracker, slice of turkey
    *** skim milk is great because it gives both
    - bad combo is too much simple sugars (like pop & candy)
    - if **unconscious** give Glucagon (IM) or IV Dextrose (D10, D50) -> how do you determine which to give?
    = the setting (i.e. family calling from home, tell them to give IM but if in ER give IV)
    ** hard to get a vein because of vasoconstriction

- **2. High Blood Glucose in *TYPE I* = Diabetic Coma/ DKA (Diabetic Keto-acidosis)**
  -> Hint: Type I is also called "ketosis-prone"
  - *What causes this?*
    -> too much food
    -> not enough medication
    -> not enough exercise
    *** none of these are the #1 cause because it is *acute viral upper respiratory infections* (w/in the last 2 weeks)
    - PT contracts upper resp. infection -> recovers w/in 3-5 days like everyone BUT after initial recovery, they start going downhill & getting more lethargic
    * so, if they come into the ER you should ask if they've had a viral upper resp. infection in the last 2 weeks
    -> what causes the high glucose is the stress of the illness that was not "shut off" and they start **burning fats for fuel** -> ketosis
  - **S & S:**
    -> *spell out **D K A***
    - **D** = dehydration
    - **K** = **k**etones (in *blood*), **k**ussmaul's, high **K**+
    * you can have ketones in your urine & not have DKA
    - **A** = **a**cidotic (metabolic), **a**cetone breath, **a**norexia (due to nausea)
    -> **hot & flushed, dry** = water is a coolant! if you lose water (as in dehydrate) you loose coolant
  - **Treatment:**
    -> fast rate IV fluids (ex. 200/hr.), w/ reg. insulin in the bag

- **3. High Blood Glucose in *TYPE II* = HHNK/HHS (Hyperglycemic Hyperosmolar Non-Ketotic Syndrome)**
  = this is *dehydration* (for any HHNK/HHS question just call it DEHYDRATION)
  - so think of the S&S of dehydration (low water, hot temp, flushed, dry)
  - nursing diagnosis = *fluid volume deficit*
  - #1 intervention -> giving fluids!
  - outcomes you want to see = increased output, BP coming up, moist mucus membranes etc.
  ** so all the outcomes of a PT coming out of dehydration
  - *Why do these PT's only get the **D** (& not the K & A)?*
  -> they do not burn fats (which make the ketones)

- Which one is insulin the most essential in treating?
  = DKA
  -> you do not *have* to use insulin w/ HHNK because you mostly need to re-hydrate them
- Which has a higher mortality rate?
  = HHNK
  -> DKA's tend to be a higher priority and symptoms are much more acute; HHNK's tend to come in to ER later than they should because symptoms are not as visible & they end up getting worse (so by the time they come in it might be too far gone)
- Who would die first if didn't treat them? (more life-threatening)
  = DKA
  -> but they tend to get treated in time

Long-term Complications:

- related to 2 problems:
  a) **poor tissue perfusion**
  b) **peripheral neuropathy**
- ex. *Diabetics have renal failure. What would this be due to?*
  -> poor tissue perfusion
  ex. *Diabetic PT has lost control of their bladder and are now incontinent.* -> peripheral neuropathy
  ex. *PT cannot feel it when he injures himself.* -> peripheral neuropathy.
  ex. *PT does not heal well when he injures himself.* -> poor tissue perfusion

Which lab test is the best indicator of *long-term* blood glucose control?

- **the hemoglobin A1C (HA1C), the glycosated/ glycosylated hemoglobin (all the same)**
- *numbers*:
  - 6 & lower is what you want to see
  - 8 & above means you are out of control
  ** **what about 7? = border**
  -> so they need to work done, evaluation, may have to go to hospital, may have an infection somewhere
- **Hint:** Boards *does not test units* so just remember the numbers!

DRUG TOXICITY

- 5 main ones to know
  -> tests nurse safety
  -> remember, they do not test units

1. **LITHIUM**
- *for the **mania** in bi-polar*
- **therapeutic level = 0.6 - 1.2**
- **toxic level = ≥ 2**
- *What about between 1.2 - 2???*
  -> no books agree on what is going on in between those levels (grey area)
  -> boards would not give you any values in the grey area (because item writers for the NCLEX need to test on what the books agree and books agree that over 2 is toxic)

2. **DIGOXIN (LANOXIN)**
- *used to basically treat 2 things:*
  a) **A-fib**
  -> remember the ABC**D**'s of treating atrial arrythmias
  b) **congestive heart failure**
- **therapeutic level = 1 - 2**
- **toxic level = ≥ 2**
  *** **NOTE:** both have 2! -> so if the question uses the value of 2, call it toxic (safer to call something toxic when it may not be than to say that it is therapeutic when it might not be)
- **take the apical heart rate *before* giving Dig**

3. **AMINOPHYLLINE**
- ***airway antispasmodic***
  - technically *not* a bronchodilator -> it does not stimulate beta-2 agonist cells to bronchodilate
  - **it just relaxes a muscle spasm**
    -> in spasms = airway is narrow
    -> when you relax a spasm, airways widen (which is why it *looks* like a bronchodilator)
    * ex. epinephrine is a bronchodilator
- ex. *sometimes PT's come in w/ an acute asthamatic attack & the bronchodilators aren't working* -> because they are in an acute, lock-down spasm & the spasm is in the way of the bronchodilator
  = give them *aminophylline first to relieve the spasm*
  = then you can give the bronchodilator after and it will work
- **therapeutic level = 10 - 20**
- **toxic level = ≥ 20**

4. **DILANTIN (PHENYTOIN)**
- ***anticonvulsant; treat seizures***
- **therapeutic level = 10 - 20**
- **toxic level = ≥ 20**

5. **BILIRUBIN**
- ***waste product from the breakdown of RBC's***
- **Hint:** Boards will *only* test bili's in newborns
  - normal adult bili = 1-2 (low)
  - newborns have higher levels from breaking down RBC's from mom = 5 +
- **therapeutic level -> elevated level = 10 - 20**
  - ex. if newborn has 9.9 it is high but still "normal"
- **bilirubin toxicity = ≥ 20**
  - right around 14-15 is when MD's start thinking about hospitalization because once you are at 15, you are halfway to toxic (do not want it to get to 18 or 19, too close to toxic)
- ***pathologic* jaundice** = bili high & infant yellow at birth
  - come out yellow
- ***physiologic* jaundice** = bili is normal at birth but over the next 2-3 days it goes high
  - becomes yellow

- **HINT:**
  - for the two **"L" drugs = 2** (pick the *lower* number)
  - the other one's = **20** (pick the higher #)

Kernicterus & Opisthotonos:
- **kernicterus** = **bilirubin in the brain** when it crosses the BBB (**condition**) -> is in the brain, in the CSF, in the meninges
  - different from **jaundice** = yellow color from too much bilirubin in the *skin*
  - usually occurs when you reach levels of **20**
  - bili in the brain causes aseptic meningitis & aseptic encephalitis; can be lethal
- **opisthotonos** = **position** the baby assumes when they have bilirubin in the brain
  = severe ***hyperextension*** due to the irritation of the meninges w/ the bilirubin
  -> newborns have high flexibility so when they hyperextend they're heels will touch their ears & they will be rigid
  -> if you see a kid w/ levels of 15 extending the neck they need follow-up immediately (medical emergency)
- ex. *In what position do you place an opisthotonic child?* **= on their side**

ABDOMINAL

DUMPING SYNDROME vs. HIATAL HERNIA

- both gastric emptying issues & are kind of opposites
  -> memorize one & you have the other

Hiatal Hernia:

- *regurgitation of acid into the esophagus because the upper part of your stomach herniates upward through the diaphragm*
  - your stomach should stay in the abdominal cavity
- w/ this, you have a ***2-chamber stomach*** (like having 2 stomachs) -> band around the middle
- **gastric contents move in the wrong direction at the correct rate**
  -> rate is not the problem, it is the direction
  -> **going the wrong way on a one way street**
- **S & S:**
  - just plain **GERD** (gastro-esophageal reflux disease)
    -> heartburn & indigestion
    *** but just because you have GERD does not mean you have hiatal hernia
  - **hiatal hernia is GERD when you lie down after you eat** (the GERD only occurs after lying down)
  - you *cannot* have hiatal hernia if your symptoms occur before lying down because hiatal hernia is dependent on *position & meal time*
- **Treatment:**
  —> goal = want the stomach to *empty faster*
  * because if it is empty, it will not reflux
  ** see table

Dumping Syndrome:

- *gastric contents dump too quickly into the duodenum*
  - usually follows gastric surgery
- **gastric contents move in the right direction at the wrong rate**
  -> the rate is the problem
  -> **speeding**
- **S & S:**
  ** long list of issues so take what you know & combine them to equal dumping syndrome
  - ***drunk person*** -> staggering, slurring, impaired judgment, delayed reactions, labile emotions
    -> from decreased blood flow to the brain because all the blood is going to the gut (because it dumped into the duodenum)
  - ***shock*** -> classic sigs such as hypotension, tachycardia, tachypnea, pale, cold & clammy
  - ***acute abdominal distress*** -> cramping pain, doubling over, guarding, borborygmi, diarrhea, bloating, distention, tenderness
  - so, think drunk + shock + acute abdominal distress
- **Treatment:**
  —> goal = want the stomach to *empty slower*
  ** see table

- Three things to play around w/ to effect stomach emptying time:
  a) change the head of the bed
  b) change the water content of the meal
  c) change the carbohydrate content of the meal

Gastric Emptying Issue Treatments	HIATAL HERNIA	DUMPING SYNDROME
Head of Bed	- HIGH position during & after meals (gravity helps empty faster)	- LOW position (lie flat and turn to side to eat)
Water Content	- high fluids	- low fluids (do not give fluid w/ the meals -> an hour before or after)
Carb Content	- high carbs because they go through faster	- low carbs to help stomach empty slow
Protein?	- low protein	- high protein

- **Hint:** Whatever carbs is, protein is the opposite.

ELECTROLYTES

- *to know the S & S of electrolyte disorders, memorize 3 sentences:*
  a) **Kalemia's (K+ imbalances) do the same as the prefix *except* for heart rate & urine output.** *(write arrows to help)*
  b) **Calcemias (Ca) do the opposite of the prefix.**
  c) **Magnesemias do the opposite of the prefix.**

- ***Kalemia's do the same as the prefix except for heart rate & urine output:***
  - **look at the prefix:** *hyper*K+ & *hypo*K+ (high & low)
  - symptoms will go HIGH w/ HYPER, LOW w/ HYPO
    -> except for the heart rate & urine which goes opposite the prefix

S & S	HYPER K+	HYPO K+
Brain	irritability, aggitation, restlessness, agressions, obnoxiousness, decreased inhibitions, loud/boistrous	lethargy, obtunded, stupor
Lungs	tachypnea	bradypnea
Heart	LOW heart rate - T waves = peaked (tall) - ST wave = elevated *** everything else about the heart aside from the rate go up	HIGH heart rate (tachycardia)
Bowel	diarrhea, borborygmi	illeus, constipation
Muscle	spasticity, increased tone, hyper-reflexive	flaccidity, low reflexes
Urine	LOW urine output	HIGH urine output

- ex. *Your PT has hyperK+. Select all that apply:*
  a) dynamic illeus
  b) obtunded
  c) +1 reflex
  d) **clonus**
  e) U wave (goes down) -> sign of cardiac depression
  f) depressed ST wave
  g) polyuria
  h) **bradycardia**
- **Hint:** do not forget, if you do not know something do not pick it (do not over select)
- ***Calcemias do the opposite of the prefix.***
  - hyperCalcemia = body goes low
    -> ex. bradycardia, bradypnea, flaccidity, lethargy, constipation
  - hypoCalcemia = body goes high
    -> ex. agitation, clonus, hyper-reflexive, seizure, tachycardia
  -
- **Trousseau's sign** = put *BP cuff on the arm* and watch to see if the **hand spasms** when it is pumped up
-
- **Chvostek's sign** = tap the *cheek* -> watch for **face spasms** (hypocalcemia)
  - sign of neuromuscular irritability associated w/ low Ca
  - -> **Hint:** in hypoCa it does the opposite of the prefix so irritability would have to be hypoCa

- ***Magnesemias do the opposite of the prefix.***
  - some review books say that hypomagnesemia is not associated w/ hypertension BUT it is

- *Could it be possible that certain symptoms could be caused by either a K+, Mg, or Ca imbalance?* **YES** (How do you break the tie?)
  - in a tie, do not pick Mg because it is not a major player

- **If it is skeletal muscle or nerve, blame it on Ca -> for everything else blame it on K+**
-
  - ex. *Your PT has diarrhea. What caused it?*
    a) **hyperK+** -> same as prefix so could be this
    b) ~~hypoK+~~ -> things go down so not this one
    c) ~~hypoCa~~ -> opposites of prefix so could be this
    d) ~~hypoMg~~ -> opposites of prefix so could be this **
    in a tie, do not pick Mg; if it is not skeletal or nerve you rule out calcium
  ** **Hint:** when answering these kinds of questions, draw arrows! (i.e. diarrhea is an "up" symptom)
  —> if the question had asked about tetany use the sentences (prefixes), arrows & tie breakers to help rule out options & because it is muscle & nerve related, it is *hypoCa*
- Common mistake in electrolytes:
  ex. Your PT has tetany. What caused it? (*tetany is the body going up*)
  a) **a high K+** -> makes body go up
  b) a high Ca -> *makes body go down! (opposites)*
  c) a low Mg -> makes body go up (but it is a tie)
  —> 90% of students would pick Ca without properly looking at the question because the question is going the other way (**use the sentences & arrows**)
  ** do not do the tie breaker first
- **prefixes -> arrows -> tie breakers**

Sodiums:

- d **e** hydration
  - hyp**e**rnatremia
- **o** verload
  - hyp**o**natremia
- **dehydration & overload are opposites**
  -> think of the signs & symptoms of both situations

- ex. *In addition to a high K+, what other electrolyte imbalance is possible in DKA?*
  - hyperNatremia
    -> because of *dehydration*

- **Earliest (first) sign of any electrolyte disorder: = numbness & tingling** -> ***paresthesia***
  ** circum-oral paresthesia (numb & tingling lips) is a very early sign
- **UNIVERSAL SIGN of electrolyte imbalance is muscle weakness** = ALL of them cause this
  = ***paresis***

Treating Electrolyte Imbalances:

- the only one that really gets tested is **K+**
  -> remember, high K+ is the *most dangerous* because it can stop your heart
- **Rules:**
  a) ***Never push K+ IV***
  b) ***Not more than 40 of K+ per L of IV fluid***
  -> call and clarify if there is an order for more (question the order if it is over 40)

c) ***Give D5W w/ regular insulin*** (**K enters early**)
- fastest way to lower K+
-> this will drive the K+ into the cells *out* of the blood (it is the K+ in the blood that kills you, not the ones in the cells)
-> this does not get rid of the extra K+ but it *hides it* well (does not really solve the problem BUT it saves their the PT's life)
*** buys time to solve the underlying problem (but if you do not fix it the K+ will eventually leak back into the blood) - **temporary fix**

d) ***Kayexalate*** (**K exits late**)
- full of *sodium*; sits in the gut
- route: oral ingestion or rectal enema
- trades sodiums for K+ so you can poop out K+
-> PT ends up w/ high sodium (hyp**e**rnatremia)
*** which is then dehydration which is easier to treat (trading a life-threatening imbalance w/ a non life-threatening one BUT the PT will still have an electrolyte imbalance)
-> pro's of kayexalate = get's rid of excess K+ **permanently** as it leaves the body
-> con's of kayexalate = takes a long time (HOURS) & the PT may not live that long

- *best way to get rid of K+ to fix the imbalance by using both D5W w/ reg. insulin + Kayexalate*

ENDOCRINE

- focus on the **thyroid** & **adrenal** glands -> what you need to know most for the test
- **Hint:** change the word 'thyroid' to '**metabolism**' (the thyroid regulates metabolism)

THYROID

Hyperthyroidism:

- a.k.a. **hypermetabolism**
- **think of all the S & S that you would see in a high metabolism** such as:
  - weight loss, high BP & heart rate, anxious & irritable, hyper, heat intolerance (cold tolerance), **exophthalmus**
    -> think Don Knotts
  - called **Grave's disease** (***run*** *yourself into the* ***grave***)
- 3 treatment options for too much hormone:
  a) ***radioactive iodine***
    i. PT should be in a room by themselves for 24 hrs.
      -> no visits for the first 24 hrs.
    ii. after that, PT needs to be extra careful with their urine (i.e. flush 3 times after voiding, if urine spills on the floor the hazmat team *must* be called)
      -> radioactive material is excreted via urine
      -> *biggest risk to nurse is the urine*
  b) ***PTU -> Propylthiouracil***
    - "**p**uts **t**hyroid **u**nder" = slows thyroid down
    - primary use as a cancer drug BUT is used specially for hyperT
    - *nursing role:*
      -> be aware that it is an immunosuppresent so WBC count needs to be monitored
  c) ***Thyroidectomy*** (most common way)
    - partial or total removal -> PAY ATTENTION TO THIS IN THE TEST (*most important*)
    - **total** = need lifelong hormone replacement
      -> at risk for *hypocalcemia* (because of parathyroid, hard to save it in a total)
      -> check Trousseau's & Chvostek's
    - **sub-total** = do not need lifelong replacement because but may need it for a bit before the leftover thyroid starts "kicking in"
      -> less risk for hypocalcemia
      -> at risk for **thyroid storm/crisis; thyrotoxicosis** (total's never get this)

- **Thyroid Storm:**
  1. super high temps. (105 & up)
  2. extremely high BP's (stroke category; ex. 210/180)
  3. severe tachycardia (ex. could be in the 180's)
  4. have psychotic delirium
  —> MEDICAL EMERGENCY!!! can cause brain damage (can fry the brain to death)
  - immediate treatment = *get the temperature down & get the O2 up*
    -> *first* way - ice packs
    -> *best* way - cooling blanket
    -> O2 per mask at 10L (BUT, remember they are psychotic so good luck keeping that mask on)
    ** maybe pick this first if picking between O2 & ice packs
  - will come out of it themselves or die -> self-limiting
  - do not medicate
  - 2 on 1 (need 2 people to care for these PT's)

Post-Op Risks:

—> depends on type of surgery & timeframe (HAVE TO KNOW THIS)

- **1st 12 hours:**
  a) *does not matter if total or partial;* priority is **airway**
    - thyroid is in the neck
    - any edema can cause constriction of airway
  b) **hemorrhage**
    - endocrine gland -> has a lot of blood vessels
- **12-48 hours:**
  - need to pay attention to the *type* of thyroidectomy
  a) **T**otal = **tetany** due to the low Ca
    - can cause constriction of airway
  b) **S**ub-total/Partial = **thyroid storm**
- **after 48 hrs:**
  - big risk is infection
  *** but never pick infection in the first 72 hours

Hypothyroidism:

- a.k.a. **hypometabolism**
- **think of all the S & S seen in low metabolism**:
  - obese (weight gain), flat/boring personality, cold intolerance (heat tolerance), low BP & heart rate
  - called **Myxedema**
- treatment option for not enough hormone:
  - **give thyroid hormones** -> Synthroid (levothyroxine)
- DO NOT SEDATE THESE PT'S - because they're body is already super slow & you could put them into a coma = **myxedema coma**
  - *question any pre-op orders that have sedation* (i.e. Ambien before surgery)
  - if PT is NPO before surgery you *need* to call the MD because they need to be able to take their morning thyroid hormone PO (**never hold thyroid pills pre-op without express order to do so**)
    -> if no hormone replacement they will be *hypothyroid* & that will cause issues when being given sedative agents (anesthetics) for surgery

ADRENAL CORTEX

- coincidentally, these diseases start with the letter A or C (like the initials of adrenal cortex)
  - ex. Grave's would not be one, Cushing's would

Addison's Disease:

- ***under-secretion*** of the adrenal cortex

  - one of the *rarest* endocrine disorders
- **S & S:**
  a) **hyper-pigmented**
  - very tanned (look healthy)
  b) **do not adapt to stress** (do not have regulation of stress response)
  - when stressed, BP will go down & glucose will down which will put them into **shock**
  ** the purpose of the stress response is perfuse the brain w/ blood (raise BP) & give the brain glucose (raise glucose)
- **Treatment:**
  - **steroids** (because they're low in steroids)
  -> **glucocorticoids**
  ** **all steroids end in '-sone'**
  -> *in Addison's you "add a -sone"*

Cushing's Syndrome:

- ***over-secretion*** of the adrenal cortex
  - "cushy" sounds like you have more of something
- **S & S:**
  ** **HAVE TO KNOW THIS**
  ** **gives you 2 things: the S&S of Cushing's & the side-effects of steroids**
  ** *draw a picture of a little man (a.k.a. **Cushman**)*
  - *moon face with a beard*
  - *big big body w/ a bump on the front & the back*
  - *skinny arms & legs*
  - *fill him full of water & write 'Na' inside (put K+ outside of the body)*
  - *draw striae on his abdomen (stretch marks)*
  - *write 'high glucose' (MOST IMPORTANT)*
  - *draw bruises*
  - *word bubble = "I'm mad. I have an infection."*

  a) moon face
  b) hirsutism (lots of excess hair)
  c) central obesity
  d) *bumps* = gynecomastia & kyphosis (buffalo hump)
  e) atrophy of extremity muscles
  f) retains Na & water (thus, losing K+)
  g) stretch marks
  h) hyperglycemia *(look like diabetics)*
  i) easily bruised
  j) easily irritable
  k) immunosuppressed
- ex. **If you are on a steroid *and* you are a diabetic, what do you do?**
  - need a lot more insulin (because steroids increase the blood glucose)
- ex. *PT w/ acute COPD exacerbation on Solu-Medrol (a steroid) IV push Q8 to reduce inflammation in the airway. What nursing action needs to be taken on this PT?* = Accu-Chek's Q6 because of the high glucose!
  -> steroids make glucose go up EVEN IF you are not a diabetic
- **Treatment:**
  - **adrenalectomy (**classic treatment for hyper-secretory glands is to cut it out)
  -> *bilateral adrenalectomy* (remove all)
  -> but then this causes you to have Addison's which means you have to have steroid treatment (which makes you look like "Cushman" all over again which is the reason you got the adrenals removed in the first place)
  -> takes about 1-2 yrs. just to get equilibrated back to feeling normal

- ***endocrine surgery creates the opposite problem***

CHILDHOOD DEVELOPMENT

- children's toys -> how to select the appropriate play activity/toy given the age of the child
- **3 things to consider:**
  - ***Is it safe?***
  - ***Is it age appropriate?***
  - ***Is it feasible?***

Safety Considerations:

- a) **no small toys for children under 4**
  - no small parts that can be aspirated for under 4
- b) **no metal toys if oxygen is in use**
  - because of sparks
  - might use the word "*dye-cast*" instead of metal (ex. hot wheels car)
- c) **beware of fomites**
  - **fomite** = *non-living* object that harbours *microorganisms*
    ** *vector/host* is the name for living
  - toys are notorious fomites on a pediatric unit (kids stick them in their mouths)
  - worst fomite = stuffed animals
  - best kinds of toys -> hard plastic toys (because you can terminally disinfect them)
  - ex. *If you have a child who is immunosuppressed, what would be the best toy for them?* -> a hard plastic action figure

Feasibility:

- **"could you do it" in a certain situation**
- ex. Is swimming a good/safe activity for a 13 yr. old? YES
  ex. Is swimming an age appropriate activity for a 13 yr. old? YES
  ex. *Is swimming feasible for a 13 yr. old in a body cast?* NO
- use common sense

Age Appropriateness:

- this is what mostly gets tested
  -> *if the test gives you a certain age, you need to know what toy/activity to give them*
- **0 - 6 months:**
  - children at this age are **sensory-motor**
  - ***best toy* = musical mobile**
    -> something that stimulates BOTH sensory & motor
  - if they do not have *mobile* as a choice, look for something that is large & soft
- **6 - 9 months:**
  - working on skills of **object permanence** (the idea that something is still there even if you cannot see it) -> play at this age should be teaching them this
  - ***best toy* = "cover-uncover toy"**
    -> choose something easy to cover & uncover (i.e. jack-in-a-box, pop up toys, books with movable parts that cover/uncover)
  - peek-a-boo, putting blanket on head & pulling off
  - *2nd-best toy* = something large & hard
  - worst toy for this age is the musical mobile (because they can pull themselves up, pull the mobile and strangle themselves)
- **9 - 12 months:**
  - working on **vocalization**
  - ***best toy* = speaking/talking toys**
    -> ex. tickle me Elmo, talking books
  - purposeful activity w/ objects (at least 9 months)
    -> ex. building w/ blocks
    -> **Hint:** Never pick an answer w/ the following words if the kid is under 9 months = *build, sort, stack, make, construct* (because they are "purpose words")
- **Toddlers -> 1 - 3 years:**
  - working on **gross-motor skills**
    -> running, jumping
  - ***best toy* = push-pull toys**
    -> ex. wagons, lawnmowers, little strollers
  - if it takes finger dexterity, then DO NOT choose it for the toddler
    -> ex. no colored pencils, no blunt scissors
  - finger-painting is appropriate (should be called "hand" painting) -> is not a dextrous activity, it is gross motor
  - **parallel play** = play alongside others but not with
- **Preschoolers:**
  a) working on **fine-motor skills**
  -> things that use *finger dexterity*
  b) working on **balance**
  -> ex. tricycles, tumbling, skating, dance class
  -> swimming is more of a gross motor skill because it does not take balance (can start this w/ infants)
  - **co-operative play** = play w/ others
  - **pretend play** = highly imaginative at this stage
- **School-aged:**
  - characterized by the 3 C's
  a) **creative** = let *them* make it (do not make it & give it to them)
  -> better to give them blank paper & crayons instead of coloring book so that they can *create* their own pictures
  -> **LEGO** age! (let them create the trucks and cars instead of giving them toy cars)
  b) **collective** = they like collecting things
  -> etc. beanie babies, pokemon, barbies
  c) **competitive** = like to play games where there is a winner & a loser
  -> *preschoolers* want games where everyone is the winner & everyone gets the same prize
- **Adolescents:**
  - **peer-group association** = they want to hang out with their friends and fit in
  - if you have a question stating that there are a group of teenagers hanging out in one teenager's room you let them unless 1 of 3 things is happening:
    a) if anyone is fresh post-op (under 12 hrs.)
    b) if anyone is immunosuppressed
    c) if anyone has a contagious disease

NEURO

LAMINECTOMY

- **lamina** = the vertebral spinous processes
  -> the bumpy bones you feel on the spine
  ectomy = removal
- removing posterior processes of the vertebral bones
- **reason -> to relieve nerve root compression**
  - cut away some of the bone to relieve the pressure on nerves (give nerves more room to exit)
- a.k.a. **decompression surgery**

S & S of Nerve Root Compression (3 P's):

- **Pain**
- **Paresthesia** = numbness & tingling
- **Paresis** = muscle weakness

- **For Laminectomy questions, the most important thing to pay attention to in *any* neuro question is LOCATION, LOCATION, LOCATION!!**
  - will determine symptoms, prognosis, & treatment
  - *LOCATION IS EVERYTHING IN NEURO*
- **3 locations in Laminectomies:**
  - **cervical** = neck
    -> innervates the *diaphragm* (breathing) & *arms*
  - **thoracic** = upper back
    -> innervates abdominal muscles (cough mechanism) & gut muscles (bowels)
  - **lumbar** = lower back
    -> innervates the bladder & the legs

Pre-Op Laminectomy:

- **when you change the location, you change the answer**
- ex. What is the most important pre-op assessment for a ***cervical*** **laminectomy**?
  = breathing & if it is not one of the choices, pick the one that checks the function of the arms & hands
- ex. What is the most important pre-op assessment for a ***thoracic*** **laminectomy**?
  = coughing & bowel sounds
  -> if abdominal muscle function is affected, PT will not be able to contract enough to cough properly
- ex. What is the most important pre-op assessment for a ***lumbar*** **laminectomy**?
  = bladder function (voiding, distention), or function of legs and feet

Post-Op Laminectomy:

- #1 post-op laminectomy answer on N-CLEX is **log-roll**
  -> for any *spinal injury*
- 3 other things to know about mobilizing PT's after surgery:
  a) **Do not dangle these PT's**
  - go from lying to immediate standing/walking
  - they can sit on the edge of the bed long enough to avoid orthostatic hypoTN but not more than that

  b) **Do not let PT sit for longer than 30 mins**
  - question this typical post-op order: *up in chair for 1 hr TID*
    -> in chair for meals is ok because usually meals only last for 30 mins

  c) **PT may walk, stand & lie down w/o restrictions**
  - restrictions *only* on sitting
    -> jobs w/ sitting all day (i.e. admitting clerk) has shown to have the most occurrence of back issues/pain

Post-Op Complications:

- **they depend on location!**
- **cervical:**
  - # 1 complication is **pneumonia** (because breathing is affected)
- **thoracic:**
  - **pneumonia** -> cannot cough properly
  - **ileus** -> affected bowel function
- **lumbar:**
  - **urinary retention** -> affected bladder function
  - issues w/ the legs
- ex. You are caring for a PT w/ a *lumbar* oligodendrogliocytoma. What's the #1 problem?
  a) airway c) cardiac arrhythmia
  b) ileus d) **urinary retention** -> *it is lumbar*
  *** *LOCATION LOCATION LOCATION*

- **typically, do not have chest tubes w/ laminectomies BUT the *anterior thoracic* will have chest tubes**
  - means the surgery *goes through the front of the thorax to get to the spine* so you need tubes in order to address pneumo/hemathorax

Laminectomy WITH FUSION:

- **"with fusion"** -> key word; means that a *bone graft is taken from the iliac crest*
  - take some bone from your hip to fuse in between the bones from where the disc was taken out (to keep from grinding)
- most laminectomies *do not* have fusion
  - because usually it is just the "wing thing" being taken out BUT if the disc is also removed, you need fusion
- **PT will have 2 incisions:**
  a) **hip**
  -> has the most pain, most bleeding & drainage (will have the JP/Hemovac drain)
  -> post-op, this one causes the most problems
  ** surgeons want to get rid of this incision because it costs more, has more risks, want to cut recovery time/hospital stay in half, less drainage if gone -> *surgeons are using cadaver bones from bone banks* (no more 2nd incision; risk for rejection is low)

  b) **spine**
  -> highest risk for rejection

** both have equal risk for infections

Discharge Teaching for Laminectomies:

- very important!
- **4 Temporary Restrictions:**
  a) **Do not sit for longer than 30 mins**
  - applies for 6 weeks
  - **Hint:** if you have to guess long a restriction applies for something, you should pick 6 weeks (otherwise if you know what it is pick the it)

  b) **Lie flat & log roll for 6 weeks**
  c) **No driving for 6 weeks**
  d) **Do not lift more than 5 pounds for 6 weeks**
  - ex. gallon on milk
- **3 Permanent Restrictions:**
  a) **Will never be allowed to lift objects by bending at the waist**
  - should lift with the knees (everyone should)

  b) ***Cervical* lam's are not allowed to lift *anything* over their head**
  - for the rest of their life
  - get step stools

  c) **No jerky amusement rides, off-roading, horse-back riding etc.**

- **the Laminectomy info can be used to get *any spinal cord* questions right**
  - pay attention to the *locations*

LAB VALUES

- **you have to know the main ones but also know which ones are more dangerous than others**
  -> need to **know how to prioritize** PT's according to lab values (not good enough to just know basics)
- **scheme (priority levels):**
  -> the value is abnormal BUT what priority is it?
  A = **not a priority/low priority**; do not do anything about, not a big deal (do not really need to report it)
  B = need to be concerned but nothing you need to do; just needs closer monitoring
  C = crossed a line from low to high priority; it is **critical**, you have to do something about it
    i. *always hold (if there's something to hold)*
    ii. *assess (focused)*
    iii. *prepare to give*
    iv. *call whomever is appropriate*
  D = **highest priority** that you can possibly have w/ a lab value; do something STAT!
  -> you cannot leave their bedside (you can leave the bedside of a "C" level if needed); get other people to help

- **Hint:** Assess before you do *unless* delaying doing puts your PT at higher risk! (ex. blood transfusion reaction)
  - ex. you should put the HOB up first before doing resp. assessment because keeping a dyspneic PT flat on bed longer puts them at higher risk
  - do not FORGET TO SEE IF IT IS A *FIRST* vs. *BEST* question

Name and Info	Normal Range	Priority Level if Abnormal
Serum Creatinine best indicator of kidney function	0.6 - 1.2 (same as Lithium)	**A** - never make a PT w/ high creatinine as highest priority - probably have kidney disease BUT they are not going to die in the next 4 hours - only time you might call MD is if they're going for a test that has a dye in it (but still wait to call in the morning, not right away)
INR (international normalized ratio) (variation of PT) monitors Coumadin	2 - 3's	**C = anything that is 4 & above is** i. hold Coumadin ii. assess bleeding iii. prepare to give Vit. K iv. call MD
K+ not a good indicator of something specific, just that something is wrong	3.5 - 5.3	**C = if lower than 3.5** i. nothing to hold ii. assess the heart iii. prepare to give K+ iv. call MD **C = between 5.4 - 5.9** i. hold all K+ ii. assess the heart iii. prepare to give D5W + reg. insulin + Kayexelate iv. call MD **D = if ≥ 6** (this PT could die soon; do all the same as C but do it stat! & need more than 1 person)
pH	7.35 - 7.45	**D = in the 6's** (ex. 6.58) i. nothing to hold ii. assess vitals (body goes down w/ the pH) to make sure they're alive iii. nothing to prepare BUT treat the underlying cause (which only the MD can do) iv. call MD faster than in any other case
BUN (blood urea nitrogen) nitrogen waste products in the blood	8 - 25	**A** = if elevated it is not a big deal -> assess PT for dehydration **Hint:** if they give an elevated blood value & you have no clue what's going on & they ask "for what would you assess them" -> *dehydration* is a great guess (because all blood values go up from concentration)
HgB	12 - 18 ** boards tend to not go into genders (this is the normal adult HgB)	**B** = 8 - 11 - assess for low HgB (bleeding, malnutrition) **C = below 8** i. nothing to hold ii. assess for bleeding iii. prepare to give blood iv. call MD
Bicarb	22 - 26	**A**
CO2 *** not for COPD PT's, reg. PT's** from arterial blood gas	35 - 45	**C = high but in the 50's** -> PT will be dyspneic i. nothing to hold ii. assess resp. status iii. prepare to get PT to ~~do pursed-lipped~~ breathing (prolongs exhalation to get rid of CO2) iv. breathing usually fixes it so you do not have to call **D = in the 60's -> one of the criteria for resp. failure (MEDICAL EMERGENCY)** i. nothing to hold ii. assess resp. status iii. prepare to intubate & ventilate iv. call resp. therapy *first* then MD
Hematocrit	36 - 54 * 3X the HgB (so memorize the HgB & multiply by 3)	**B** = elevated -> assess for dehydration
PO2 from arterial blood gas (*not* from pulse oximetry)	78 - 100	**C = low but still in 70's** i. nothing to hold ii. assess resp. status iii. prepare to give O2 iv. most times the O2 administration works and you do not have to call the MD because the dyspnea goes away * hypoxic -> heart rate speeds up first and when the heart cannot work anymore, the resp. rate goes up **D = if in the 60's -> the other criteria for resp. failure (MEDICAL EMERGENCY)** i. nothing to hold ii. assess resp. status iii. prepare to intubate & ventilate iv. call resp. therapy *first* then MD * you can still put O2 during this time -> will not solve the problem but will help keep them calm
O2 Sat	93 - 100	**C = anything less than 93** i. nothing to hold ii. assess them iii. prepare to give O2 if really low iv. do not need to call MD if O2 goes up * anemia falsely elevates it (you should look for other indicators); dye procedures in the last few hours also invalidates it w/false elevation

Name and Info	Normal Range	Priority Level if Abnormal
BNP (brain natriuretic peptide) best indicator of congestive heart failure	should be under 100	**B** = elevated BNP - you know they have CHF/watch them for CHF - it is not high priority because it indicates a *chronic* condition
Sodium	135 - 145	**B** = if abnormal then assess - if high -> assess for dehydration - if low -> assess for overload **C = if Na is abnormal *and* there is a change in LOC** (because it becomes a safety issue)
WBC's * 3 counts that you must know	**Total WBC** 5,000 - 11,000 **ANC** *(absolute Neutrophil count)* needs to be above 500 **CD4** needs to above 200	**C = all of them -> if they go below their thresholds** i. nothing to hold ii. assess for signs of infection iii. instead of preparing, *place* them on neutropenic precautions -> if it falls below you go from HIV to AIDS
Platelets		**C = below 90,000** -> bleeding precautions **D = below 40,000**
RBC's	4 - 6 million	**B**

- **memorize the 5 D's => highest priorities!**
  - pH in the **6's**
  - K+ in the **6's**
  - CO2 in the **60's**
  - O2 in the **60's**
  - platelet below **40,000**

  —> boards does not really put these kind of PT's against each other because it is not fair
- learn the C's

PSYCHOTROPIC DRUGS

- even though there are several classes, info tends to overlap
- **ALL psych drugs cause low BP & weight changes**
  -> usually weight gain (but a few cause weight loss)
- for most of these meds, you need to take take them for 2-4 weeks before you get beneficial effect
  - many PT's say that they do not work after only taking them for 1 week (nurse teaching)

PHENOTHIAZINEs:

- old class of drugs -> **1st gen/typical anti-psychotics**
- **ALL end in "-zine"**
- **actions:**
  - do not cure psych diseases -> reduce the symptoms
  - in **large doses they are anti-psychotics**
    -> "-zines for the zany"
  - in **small doses they are anti-emetics**
  - considered ***major* tranquilizers**
    -> *Aminoglycosides are to antibiotics as Phenothiazines are to tranquilizers = **THE BIG GUNS** (when nothing else is going to work)*
- **major *side* effects (not toxic effects):**

A = anti-cholinergic (primarily dry mouth)
B = blurred vision
C = constipation
D = drowsiness
E = EPS -> extrapyramidal syndrome (looks like Parkinson's)
F = photosensitivity
a**G** = agranulocytosis (low WBC count, immunosuppressed)
** *side effect* vs. *toxic effect* nursing actions:
  - side effect = teach PT, inform MD, keep giving med (& give drugs that can help alleviate)
  - toxic effect = hold drug, call MD immediately

- the nursing care is **treating the side effects**

  - #1 nursing diagnosis for a patient on a tranquilizer is *risk for injury (safety issues)*
- **decanoate** = long-acting **IM form** given to *non-compliant clients*
  - is something that may be court ordered

TRICYCLIC ANTI-DEPRESSANTS:

- old class of anti-depressants & most have been grandfathered into a newer class:
  - **NSSRI** = non-selective serotonin re-uptake inhibitor
- are **mood elevators** **used to** **treat depression**
  = "happy pills"
  - include ***Elavil, Tofranil, Aventyl, Desyrel***
- **side effects:**
  A = anti-cholinergic (primarily dry mouth)
  B = blurred vision
  C = constipation
  D = drowsiness
  E = *euphoria*

BENZODIAZEPINEs:

- **anti-anxiety meds**
- considered to be ***minor* tranquilizers** (primary use)
- **they *always* have "-zep" in the name**
  -> both major & minor tranquilizers have "Z's"
- ex. *Dia**zep**am (Valium), Xanax, Clona**zep**am, Lora**zep**am*
- **indications:** are *more* than just minor tranquilizers
  a) pre-op to induce anesthesia
  b) muscle relaxant
  c) good for alcohol withdrawal
  d) seizures
  e) help people when they are fighting the ventilator (relax & calm down)
- work quickly but *technically*, you should not take them for more than 2-4 weeks
- **relationship between an anti-depressant & a minor tranquilizer?**
  - one takes 2-4 weeks and you can be on it for the rest of your life (anti-depressant)
  - the other works quickly but you should only be on it for 2-4 weeks (minor tranquilizer)
  —> a lot of PT's get put on both when first admitted as the minor tranq. will work right away & then when the anti-depressant kicks in, they are taken off the minor tranq.
  * ***heparin is to warfarin as a tranquilizer is to an anti-depressant***
- **side effects:**
  A = anti-cholinergic (primarily dry mouth)
  B = blurred vision
  C = constipation
  D = drowsiness
- # 1 nursing diagnosis is *risk for injury (safety issues)*

MAOIs - MONOMINE OXIDASE INHIBITORS:

- **anti-depressants** (one of the first types developed)
  - not really used them much anymore because of the restrictions & side effects
  - dirt cheap compared to other anti-depressants
- you need to spot an MAOI when you see it on the test from the beginning of the name
  —> the beginnings of the name rhyme: ***Mar**plan, **Nar**dil, **Par**nate* (all brand names)
- **side effects:**
  A = anti-cholinergic (primarily dry mouth)
  B = blurred vision
  C = constipation
  D = drowsiness
- the important thing is **patient teaching:**
  a) to prevent severe, acute, sometimes life-threatening **hypertensive crisis** (high BP)
  - PT *must avoid all* foods containing **tyramine** (an amino acid that regulates BP)
    -> NO aged cheese (can have mozzarella & cottage cheese), yogurt, cured/preserved/organ meats, alcohol, caffeine, chocolate, fermented foods, bananas, avocado's (guacamole!), any dried fruit

  b) do not take OTC meds when on an MAOI

LITHIUM:

- used to treat **bi-polar disorder**
  -> it decreases **mania** (does not treat the depression)
- of all psych drugs, the most unique (diff. side effects) because all the other ones mess w/ neuro-transmitters
  -> Lithium does not = *stabilizes nerve cell membranes*
- **unique side effects that act more like an electrolyte:**
  P = peeing **P** = pooping
  P = paresthesia -> *earliest sign of all electrolyte imbalances*
- **TOXIC effects:**
  —> hold & call the MD
  - *tremors* - *metallic taste* - *severe diarrhea*
  Interventions for PT's on Lithium:
  #1 = **increase fluids**
  -> because they are peeing & pooping a lot so at higher risk for dehydration
  b) **watch Na levels**
  c) if they are sweating like crazy do not give free water, give Gatorade or some other electrolyte solution
  -> *PT has to have a normal Na for Lithium to work*
  d) **NOTE: Lithium is closely linked to sodium.**
  - low Na = makes Lithium *more toxic*
  - high Na = makes Lithium ineffective
  *** *need normal Sodium levels*

PROZAC -> SSRI - SELECTIVE SEROTONIN RE-UPTAKE INHIBITOR:

- similar to *Elavil (NSSRI)*
- **side effects:**
  A = anti-cholinergic (primarily dry mouth)
  B = blurred vision
  C = constipation
  D = drowsiness
  E = *euphoria*
- Prozac causes **insomnia**
  -> **give it before noon** (bad idea to give at bed time)
- When **changing the dosage** for a young adult/ adolescent, watch for *increased suicidal risk*
  -> only this age group & only when there is recent dosage change

HALDOL:

- has a **decanoate** form (long acting IM)
- basically the same as *Thorazine* so side effects are:
  - A B C D E F aG
- is also an old **1st gen/typical anti-psychotic** like the "-zine's" (major tranquilizer)
- the big thing they test for Haldol is **NMS**!
  - elderly PT's & young, white schizophrenics may develop NMS w/ Haldol overdose
- **NMS = neuroleptic malignant syndrome**
  - **potentially fatal hyper-pyrexia**
  - could reach 106-108 degrees (definitely over 105)
  - dosage for elderly PT's should be *half the adult dose*
- has anxiety & tremors (*like EPS*) & get both w/ it:
  ** boards will want to know if you know the difference between them
  —> EPS = side effect (no big deal)
  —> NMS = **medical emergency!!!** (PT can die!)
- How do you tell the difference between EPS & NMS?? **take a temperature**
  -> no excuse for the nurse to miss NMS
  -> *first action* when faced w/ a PT that has anxiety & tremors = take their temp.
  ** if over 102 call emergency response team coz it'll be a bad situation (even if it is not 105 degrees yet)
- **safety concerns related to the side effects:**
  - as soon as they get hit by Haldol, they go down

CLOZAPINE (CLOZARIL):

- prototype **2nd gen/atypical anti-psychotic**
  - new class for the "zany"
- used to treat **severe schizophrenia**
- was meant to replace the "-zines" & Haldol
  - advantage is that it does not have the side effects A B C D E or F
  - has slight effects but minor compared to "-zines"
  - **BUT does have side effect aG (agranulocytosis)**
  -> horrendous in trashing bone marrow
  -> causes unbelievably low WBC counts causing you to get horrible infections
- other variations created that have less aG effects but still have to monitor them
- not everyone gets the low WBC so some people can take it but some people cannot
- **nursing priority = monitor WBC counts**
- Note: **Geodon (Ziprasidone)**
  - has a black box warning -> prolongs the QT interval & can cause sudden cardiac arrest
  —> should not really use in PT's w/ heart problems
- **in general, these drugs end w/ "-zapine"**
  - another *tranquilizer class* that has a "z"

SERTRALINE (ZOLOFT):

- another **SSRI** like *Prozac*
- also causes insomnia BUT you *can* give it at bedtime
- the big thing these days is testing the **interactions**:
  a) ***cytochrome P450*** system in the liver = major pathway in which drugs are metabolized & deactivated in the liver
  -> Zoloft is notorious for interfering w/ this system (causes toxicities of other drugs because they are not getting metabolized)
  -> whenever you add *Sertraline* to a PT's drug regimen, you will probably have to lower the dosages of the other drugs
  b) watch for interactions w/ ***St. John's Wort***
  - you will get **serotonin syndrome**
  -> potentially life-threatening
  -> looks like the MAO PT's that eat the tyramine
  ** SAD Head = **s**weaty, **a**pprehensive, **d**izzy, **head**ache
  c) interactions w/ ***Warfarin (Coumadin)***
  - if PT on both, they might bleed out (MUST reduce Coumadin) -> watch for increased bleeding if on both because *Zoloft* makes Coumadin go toxic

MATERNAL NEWBORN

PREGNANCY:

- **you must be able to calculate a due date**
  - take the *1st day* of the last menstrual period
  - add 7 days, subtract 3 months
  - ex. PT's last menstrual period was from June 10-15
    = due date is apx. March 17
- **you need to know how much weight should/ should not be gained:**
  ** *do not worry about multiples or about women who are underweight/over-weight to begin w/*
  - **Total weight gain** = should be **28 lbs, +/- 3**
    -> **1st T = 1 lb/*month*** (3 lbs; too much is bad)
    -> **2nd & 3rd T = 1 lb/*week***
    ** on the test, if they give you a particular week of gestation, you have to be able to predict what the weight should be
  - ex. *Woman in 28th week who has gained 22 lbs. What is your impression?*
    -> Week 12 (end of 1st T) = 3 lbs., after that, each week is 1 lb.
    -> she should have gained 19 lbs, she gained 3 more than supposed to
    -> **HINT: if you take the week & subtract 9, that is the weight that *should be gained***
    * 12 - 9 = 3; 13 - 9 = 4, 20 - 9 = 11
  - being over 1-2 lbs. is ok *but* if she is 3 lbs. off she needs further assessment
    -> 4 lbs. or more off = *could be trouble*
    * ex. if PT is 6 lbs. underweight, she needs a biophysical profile to make sure the baby is still alive
  - **ideal weight gain = week - 9**
- **Fundal Height:**
  - **fundus** = the *top* part of the uterus
    -> **not palpable until week 12** (after 1st T)
  - When is the **fundus *at* the umbilicus**?
    = **20-22 weeks** of gestation
  - it is important to know fundal location to recognize date of viability and know what trimester the PT is in:
    = 20-22 weeks (24 is the end of the 2nd)
  ** ex. *if a PT is brought into ER and w/ history about the pregnancy (or she cannot tell you), you need to know what trimester she is in to know what is going on*
    -> fastest way to know the trimester = **palpate the fundus** (if you do not feel it at all, she is in the 1st T & she is the priority, not the baby)
    -> if you feel the **fundus at/below the bellybutton** she is in 2nd T (she is still priority) -> if the **fundus is above the umbilicus** she is in the 3rd T and *baby is the priority!*

Signs & Symptoms of Pregnancy:

- probable, presumptive, positive -> BUT on the test there is only **POSITIVE** & **everything else (maybe's)**
- **4 Positive Signs:**
  a) **fetal skeleton on x-ray**
  b) **fetal presence on ultrasound**
  c) **auscultation of a fetal heart rate**
  -> starts beating at 5 weeks but you *hear* it between 8-12 weeks
  d) **when *examiner* palpates fetal movement/outline**
  -> not a positive sign when mom feels it (i.e. quickening)
  ** *none of them have false positives*

- **most OB information has a range where/when it occurs (because every woman is different)**
  -> *because of this it is critically important that you read OB questions carefully & properly*
- **there can be 3 different questions for every fact in OB:**
  a) when would you ***first***…
  -> pick the **earliest** part of the range
  b) when is it ***most likely***…
  -> pick the **mid** part of the range
  c) when ***should you ___ by***…
  -> pick the **end** of the range
  ex. When should you *first* auscultate a fetal heart? = at 8 weeks
  ex. When would you *most likely* auscultate fetal heart? = 10 weeks
  ex. When *should you* auscultate a fetal heart by? = by 12 weeks
  *** PAY ATTENTION TO WHICH ONE THEY ASK!
- **quickening** = when the baby kicks -> 16 to 20 weeks
  - *first* feel = 16 weeks
  - when is it *most likely* to feel = 18 weeks
  - when *should you* feel it *by* = 20 weeks

- **The MAYBE Signs:** (probable's & presumptive's)
  a) **all urine & blood pregnancy tests**
  -> a positive pregnancy test is NOT a positive sign of pregnancy (because it only means you have the hormones that go w/ pregnancy, but does not mean you always have a fetus)
  ** which is why you can have false positives
  b) **Chadwick's sign** = *cervical* **c**olor **c**hange to **c**yanosis (bluish; includes vagina & labia)
  Goodell's sign = *cervical* softening
  Hegar's sign = *uterine* softening
  *** all occur in alphabetical order (boards tends to the *order* instead of the weeks they occur because weeks vary, *order* doesn't)

Patient Teaching in Pregnancy:

- **teaching PT's the pattern of office visits**
  *** good prenatal care is a major factor in infant mortality so teach women how often to come in for good prenatal care
  a) **once a month until week 28**
  - for all of 1st & 2nd T
  - for the early part of 3rd T
  b) **once every 2 weeks until week 36**
  c) **once every week until delivery *or* week 42**
  - by then, schedule for induction/c-section

- ex. *If a woman comes in for her 12th week checkup, when does she come in next?*
  = week 16
  ex. *If she comes in for her 28th week checkup?*
  = week 30 (& then 32, 34, 36)
  ex. *If she comes in for her 36th week checkup?*
  = week 37, 38, 39, 40, 41, 42, take the baby

- **teach her that her hemoglobin will fall:**
  - we do not worry about low HgB unless it gets really low
  - normal HgB for females = 12 - 16
    -> 1st T - can fall to **11** & be perfectly normal (not considered low)
    -> 2nd T - can fall to **10.5** & be normal
    -> 3rd T - can drop to **10** & still be called normal
    ** *acceptably low can be as low as 9*
  - tolerate lower HgB's in pregnant women the further along they are than you would w/ non-pregnant PT's

- **teaching about the discomforts of pregnancy**:
  a) **morning sickness** = 1st T problem
  - treat by eating *dry carbohydrates* (ex. crackers) BEFORE you get out of bed
  b) **urinary incontinence** = 1st & 3rd T problem
  - why not the 2nd? *the baby is an abdominal pregnancy at this point and off the bladder*
  - treat by *voiding every 2 hrs* (should do this from the start of pregnancy until 6 weeks after delivery)
  c) **difficulty breathing** = 2nd & 3rd T problem
  - teach *tripod position* (like COPD clients)
  d) **back pain** = usually 2nd & 3rd T
  - tends to get worse and worse the further along you get in the pregnancy
  - treat w/ *pelvic tilt exercises* (tilt pelvis forward)
  * ex. put foot on stool

- pregnancy questions are a good place for using common sense because it is not a disease, it is a healthy state
  -> using good health patterns
  -> *if you get a question you do not know, ask yourself*
  "what would be good for anybody?" & pick that answer

LABOR & BIRTH

- **what is the truest, most valid sign that a woman is in labor???**
  = onset of regular, progressive *contractions*
  —> not bloody show or water breaking (you can have these and not be in labor)
- **Terminology:**
  - **dilation** = the opening of the cervix
    -> goes from 0 - 10 cm
    -> 0 = closed; 10 = *fully dilated*
  - **effacement** = thinning of the cervix
    -> goes from thick to 100% effaced
  - **station** = relationship of the fetal presenting part to mom's ischial spines
    -> ***ischial spines*** = the smallest diameter through which the baby has to fit for a vaginal birth (the tight squeeze, the narrowest part of the pelvis)
    ** *if the baby cannot fit through there, the baby cannot be born vaginally*
    -> ***negative* stations** = the head/presenting part is *above* the "tight squeeze"
    * negative news
    -> ***positive* stations** = the presenting part is *below* the ischial spines and has already made it through the "tight squeeze
    * positive news
    ** ex. if the baby's head stays at -1 & -2 for 17 hours after fully dilated & 100% effaced, the head is too big and PT needs a C-section
    ** ex. if the baby's head stays at +3 for 17 hours, the baby can still be born vaginally but needs a vacuum extractor, forceps, or an episiotomy
  - **engagement** = **station 0**
    -> the presenting part is *at the ischial spines*
  - **lie** = relationship of the *spine* of the mother & the *spine* of baby
    -> ***longitudinal lie*** = *parallel* to mom's spine (good!)
    -> ***transverse lie*** = *perpendicular*, sideways (spines at a right angle); looks like a T; bad, trouble
    -> ***oblique lie*** = baby is *diagonal* into mom's hip instead of straight into the pelvis
  - **presentation** = the part of the baby that enters the births canal *first*
    -> *ROA, LOA etc.*
    -> do not spend a ton of time memorizing the presentations (this is a *hard* OB question; know the stuff that everyone needs to know!)
    ** **you cannot miss the easy ones!**
    -> the most common ones are ROA & LOA (**right & left occiput anterior**)
    ** you have much better chances guessing by picking one of these (R before L)

Stages of Labor & Delivery:

- **1 = labor (all of it)**
- - ***3 Phases of labor:***

Phases	LATENT	ACTIVE	TRANSITION
Dilation	0 - 4 cm	5 - 7 cm	8 - 10 cm
Contraction FREQUENCY	every 5 - 30 mins.	every 3 - 5 mins.	every 2 - 3 mins.
Contraction DURATION	15 - 30 seconds	30 - 60 seconds	60 - 90 seconds
Contraction INTENSITY	"mild"	"moderate"	"strong"
	Hint: memorize the middle column (active labor) because everything is sequential **NOTE: contractions should *not* be longer than 90 seconds or closer than every 2 mins. —> means trouble in labor!** - signs of uterine tetany, uterine hyper-stimulation; parameters to stop Pitocin		

- ex. *A woman comes into L & D. She is 5 cm dilated, contractions 5 mins. apart lasting for 45 seconds. What phase is she in?* = active

- **2 = Delivery of the *Baby***
- **3 = Delivery of the *Placenta***
- **4 = Recovery**
  - 2 hours
- **What is the purpose of uterine contractions in:**
  - 1st stage = *dilate* & *efface* the surface
  - 2nd stage = push the *baby* out
  - 3rd stage = push the *placenta* out
  - 4th stage = stop bleeding by contracting the uterus
- When does **postpartum** *technically* begin?
  = 2 hrs after delivery of the placenta
- **DO NOT MIX UP PHASE & STAGE! pay attention!**
  - ex. What is the #1 priority in the *2nd phase*?
    = pain management
  - ex. What is the #1 priority in the *2nd stage*?
    = clearing the baby's airway
  - ex. What are major nursing actions to take in the *3rd phase*? = check dilation, help w/ pain & breathing
  - ex. What are major nursing actions to take in the *3rd stage*? = assessing blood loss, making sure there are 3 vessels in the cord, making sure the whole placenta comes out
- **Teaching PT's how to time contractions:**
  - **frequency** = beginning of one contraction to beginning of the next (A to C)
  - **duration** = beginning to end of 1 contraction (A to B)
  - **intensity** = strength of contraction -> *subjective*
  - teach her to palpate w/ one hand over the fundus with the pads of the fingers (fingertips)
    * use other hand to time it

COMPLICATIONS OF LABOR

- there are 18 that can occur in L & D that you need to know **BUT there are only 3 protocols you need to know for all of them**

- a) **Painful Back Labor**
  - usually for OP positions (occiput posterior) —> think "oh pain!"
  - *low priority*
  - do 2 things:
    i. **position** = place her in knee chest position (face down on hands & knees, bum up in air)
    -> to have baby come off the coccyx
    ii. **push** = take your fist and push it into her sacrum (applies counter pressure to relieve pain)

- b) **Prolapsed Cord**
  - OB MEDICAL EMERGENCY!!! high priority!
  - when the **cord** is the *presenting part* (comes out first) & so when the head comes down it presses on the cord and cuts of the supply causing baby to "kill itself"
  - do 2 things:
    i. **push** = baby's head off cord (do not touch the cord)
    ii. **position** = knee chest position to take compression off of the cord

** delivery is then usually emergency C-section (take mom to OR in knee-chest position while holding head)

Interventions for ALL Other Complications in Labor & Birth:

- ex. include uterine atony, uterine hypoTN, vena cava syndrom, uterine tetany…etc.
- all treated the same, treated with **LION:**
  L = 1st, turn them on their **left side**
  I = increase **IV**
  O = **oxygenate** them
  N = notify MD
  ** LPN's can do all *except* increase IV
  - *left side position* is first but also probably best because it addresses uterine perfusion which protects/saves baby
- **PIT: in an OB crisis, if Pitocin is running, STOP IT!**
  = this would become the first thing then before turning

  them onto their left side

Pain Meds in Labor:

- **do not administer a pain med to a woman in labor if the baby is likely to be born when the med peaks (review peaks lecture)**
  - ex. *You have a primigravida at 5 cm who wants her IV push pain med. Will you give it or not?*
    -> is it likely that a primigravida at 5 cm will deliver in the next 15-30 mins? NO, so give her the med
  - ex. *A multigravida at 8 cm wants her IM pain med. Do you give it?*
    -> is it likely that she could deliver in the next 30-60 mins? YES, so no IM med for her

MATERNAL NEWBORN continued

FETAL MONITORING PATTERNS:

- 7 that you should know but easy to remember
- a) **Low Fetal Heart Rate**
  = **under 110**
  - BAD! do **L I O N** & if Pit was running, stop it
- b) **High Fetal Heart Rate**
  = **over 160**
  - not a big deal, not a high priority
  - document & *take mom's temperature*
    -> could be up because mom has a fever (so nothing wrong with baby)
- c) **Low Baseline Variability**
  = **when the fetal heart rate stays the same & does not change** (whether high, low, or in the middle)
  - BAD! do **L I O N**
- d) **High Baseline Variability**
  = **fetal heart rate is always changing**
  - good! document it
- once a person is born, if their vital signs stay the same they are called *stable* BUT before you are born, if your vital signs stay the same it is bad
  -> we do not want to see the opposites happen
- e) **Late Decelerations**
  = **heart rate *slows* down near the end or after a contraction**
  - BAD! do **L I O N**
- f) **Early Decelerations**
  = **heart rate *slows* down before or at the beginning of a contraction**
  - normal, no big deal; document it
- g) **Variable Decelerations**
  - **VERY BAD!!!** this is what happens when you have *prolapsed cord* -> **push, position**
  - this is the most unique one
- **3 good**
  3 bad = all start w/ an L -> L I O N
  1 variable = push, position
- **What causes the different heart rates?**

V = variable	**C** = cord compression
E = early dec.	**H** = head compression
A = acceleration	**O** = it is ok
L = late dec.	**P** = placental insufficiency

- **What answer always wins in a tie??**
  - in OB = **check fetal heart rate**

STAGE 2 of LABOR = Delivery of the Baby:

- all about order:
  1 = deliver head
  2 = suction the mouth first, then nose
  3 = check for nuchal cord (around the neck)
  4 = deliver the shoulders & the body
- **the baby MUST have an ID band on before it leaves the delivery area**

STAGE 3 of LABOR = Delivery of the Placenta:

- a) **make sure it is all there**
- b) **check for 3 vessel cord**
  - 2 arteries
  - 1 vein

STAGE 4 of LABOR = Recovery:

- ***is the first 2 hours after delivery of the placenta***
- **4 Things you do 4 Times an hour in the 4th Stage:**
  *** Q15**
  a) **vitals signs**
  - assessing for *S&S of shock* (pressures down, rates up, pale, cold & clammy)

  b) **check the fundus**
  - if boggy -> massage
  - if displaced -> catheterize

  c) **check the perineal pads**
  - to see how much she is *bleeding*
  - if excessive -> will 100% saturate in 15 mins. or less (so if 98% saturated, she is still ok)

  d) **roll her over**
  - check for *bleeding underneath* her
  —> also lets you assess the perinanal area

POSTPARTUM:

- assessments -> usually 4-8 hrs. depending on PT stability
- **B** = breasts
  U = **uterine fundus** (want it **firm**, **midline**, height r/t to the bellybutton)
  -> should be going down 1 cm per postpartum day
  B = bladder
  B = bowel
  L = **lochia** (*rubra, serosa, alba*)
  -> rubra = red; serosa = pink; alba = whitish yellowish
  E = episiotomy
  H = hemoglobin & hematocrit
  E = **extremity check**
  -> check for ***thrombophlebitis*** (via bilateral calf circumference measuring)
  -> Homan's sign is not the best answer because you can have it w/o having thrombophlebitis & vice versa (not as reliable or valid)
  A = affect (emotions)
  D = discomforts
  ** **3 big things tested in postpartum are the uterine fundus, lochia, & extremities**

Variations in the NEWBORN:

- review all the *normal's*
- **know difference between:**
  - **caput succedaneum** = **c.s.** -> crosses sutures
    -> symmetrical
  - **cephalohematoma** = bleeding
- **normal physiologic jaundice** -> appears *after 24 hrs.*
- pathologic jaundice -> baby comes out yellow

OB MEDS:

- do not have to be an expert; just know general info what they are & a few main things about them —> **6 main meds**
- **Tocolytics = stops labor** (threatening prematurity)
  a) **Terbutaline**
    - causes maternal tachycardia
  b) **Magnesium Sulphate**
    - watch for TOXICITY
    - watch for hypermagnesemia (everything down)
      -> heart rate down
      -> BP down
      -> hypo-reflexive (want to keep it +2)
      -> resp. rate down (want at least 12 resps.)
      -> LOC goes down
    *** boards likes to test **reflexes & resp rate** most
    - **closely monitor the PT's reflexes & resp. rate**
- **Oxytocics = stimulate/start & strengthen** labor
  c) **Pitocin**
    - can cause *uterine hyper-stimulation* (i.e. contractions longer than 90 seconds, closer than 2 mins. apart -> BAD!)
  ci) **Methergine**
    - causes high BP (contracting -> vasoconstriction raises BP)
- **Fetal Lung Maturing meds:**
  e) **Betamethasone** - a steroid
    i. **mom** gets it
    ii. given **IM**
    iii. given ***before*** baby is born
  f) can be repeated as long as baby is in utero

- **Survanta (Surfactant)**
    i. **baby** gets it
    ii. given **transtracheal** (blown in through trachea)
    iii. given ***after*** baby is born

MEDICATION HELPS & HINTS

- to help get basic facts down
- **What is Humulin 70/30?**
  = mix of N & R insulins
  - 70 & 30 are percentages
    -> 70 % is N
    -> 30% is R
- **Can you mix insulins in the *same* syringe?**
  = YES
  - when you draw it up go clear to cloudy, **R to N** ("RN's draw up RN")
  - when talking about pressurizing the vials you inject air into N first, then R & draw up R, then draw up N
- **Injections:**
  —> will ask what needle to use for a particular injection
  - **IM** = "I" looks like **1**, pick the answer that has the 1's in them (21 gauge…)
  - **SubQ** = "S" looks like **5**

HEPARIN vs. COUMADIN:

- **in the top 3 most commonly tested drugs!**

	HEPARIN	COUMADIN
Route	IV or SubQ	only PO
Onset	works immediately	takes a few days to a week to work
Length of Use	*cannot* be given for longer than 3 weeks (**except Lovenox**) - body starts making heparin antibodies after 3 weeks which can be life-threatening	can be given for the rest of your life
Antidote	**Protamine sulphate**	**Vit. K**
Lab Test that monitors	PTT (partial thromboplastin time)	PT -> INR
	can be given to pregnant women	*cannot* be given to pregnant women

- only major anti-psychotic that can be given to pregnant women = **HALDOL**

K+ Wasting & K+ Sparing Diuretics:

- probably the only questions you'll get about diuretics is whether if wastes or spares K+
- **any diuretic drug ending in "X" it waste's K+**
  -> also **Diuril**
  *** ***otherwise, it spares K+***

Baclofen:

- boards test **muscle relaxants** as a class
- sore "back" -> *if you are on Baclofen, you are on your back loafin'*
- **2 side effects:**
  a) **fatigue/drowsiness**
  b) **muscle weakness**
- **Patient teaching:**
  a) do not *drink*
  b) do not *drive*
  c) do not *operate heavy machinery*
- **Flexeril** -> the other **muscle relaxant** they test

PEDIATRIC TEACHING

- review of **Piaget's theory of cognitive development**
  -> will not actually name Piaget but will ask questions on how you would teach children in order to test knowledge of the theory

4 Stages of Piaget (Cognition):

- a) **0 - 2 years = SENSORY-MOTOR**
  - these kids are totally **present oriented**
    -> do not think about past or future
    -> only sense what they are doing right now
  - teaching: *while/as you do it* & teach them *what you are doing* (think present tense)
  - teach **verbally** -> just tell them (do not understand "play" yet)
  - *ex. when teaching a PT about a procedure, teach while doing it (will not work to teach them ahead of time) -> no pre-op/post-op (except for the parents)*
- b) **3 - 6 years = PRE-OPERATIONS** (think *preschool*)
  - these kids are **fantasy oriented**
    -> imaginative, illogical, thinking obeys no rules
    -> "you cannot *reason* w/ a preschooler"
  - understand past & future so you can teach them *before* & *after*
    -> BUT has to be shortly *before* or *after* (ex. the morning of, the day of, 2 hrs. before…)
    -> do not give them too much time to get imaginations going on something
  - teaching: what you are *going to do* (future tense)
  - teaching through **play**
    -> *ex. the day of, teaching PT about lumbar puncture by playing w/ equipment/dolls*
- c) **7 - 11 years = CONCRETE OPERATIONAL**
  - these kids are **rule oriented**
    -> cannot think abstractly yet, rigid
    -> only one way of doing something
    -> "my teacher said", or "my parents said"
    will tell you you are doing something wrong if it was different from the way a previous person did it (ex. wound dressings by different nurses)
  - teaching: *days ahead*; what you are *going to do* + *skills*
  - teach via **age appropriate reading & demonstration**
- d) **12 - 15 years = FORMAL OPERATIONAL**
  - can **abstract think** & **think cause & effect**
    -> **Hint:** as soon as a kid hits 12 and they ask about teaching, it is no longer a pediatric question and is an adult med-surg question (**you teach them like an adult**)
  - ex. *When's the first age that a child can manage their own care?* = 12
    -> a 7 yr. old can do the skills related to their care but *cannot manage;* **managing** requires making decisions which require abstract thinking
    -> it is not the severity of the illness that determines who can manage it, it is the age (ex. a 10 yr old w/ scraped knee vs. 13 yr old w/ renal dysfunction)
  *** **key word is manage** (13 yr. old); *skills* = 7-11

7 PRINCIPLES of PSYCH

- 1. Make sure you know which phase of the relationship you are in
  - pre-interaction, introduction/orientation, working, termination
- 2. Gift giving
  - **NO GIFTS IN PSYCH** (giving or receiving)
  - ex. do not accept flowers from a PT w/ schizophrenia because to you they might just be flowers but to them that might be a marriage proposal
- 3. Do not give advice
  - ex. If the PT asks "What do you think I should do?" you reply w/ "What do *you* think you should do?"
  - you can give advice in med-surg or peds
- 4. Do not give guarantees
- 5. **Immediacy**
  - if a PT says something, **the best answer is the one that keeps them talking**
    -> do not pick answers that say "refer to social work" because that shuts off communication right then and there
    -> **Hint:** *it is never wrong to get your PT to talk*
- f) Concreteness
  - do not use slang
    -> psych PT's tend to take things literally
  - if PT's use made up words (*neologism*), those are not concrete so do not use them
- g) **Empathy**
  - you have to know empathy!!! -> all about feelings
  - the best psych answers are the answers that communicate to the PT that the nurse accepts the PT's ***feelings*** as being valid, real, & worthy of action
  - bad answers:
    -> "do not worry" (because it tells them not to feel) -> "do not feel", "you should not feel…", "I would feel", "anybody would feel", "nobody would feel", "most people feel"

Empathy Questions:

- **recognize that it is an Empathy question**
  - always have a quote in the question & each of the answers is a quote (i.e. PT says; what would you say?)
- **put yourself in the client's place**
  - you often have to read the feeling into the questions
- **ask yourself: If I say those words (in an answer) and I meant them, how would I be feeling after?**
- **go and choose the answer that reflects that feeling (or anything close)**
  - Do not choose the feeling that reflects the PT's words
  - *empathy questions usually have a "sucker answer"* (to sucker you into picking that one) & one of them is one that reflects/over-emphasizes what the PT said but ignores what the PT felt
    -> ***you are supposed to pick the answer that reflects what they felt (& ignores what is said)***
    * do not mix this up

PRIORITIZATION, DELEGATION, STAFF MANAGEMENT

PRIORITIZATION:

- testing to see how you prioritize 4 different PT's
- **you are deciding which PT is sickest or healthiest**
  - *pay attention to which one you are being asked for*
  - ex. *if question is asking "Who do you discharge?"* -> asking for your lowest priority/healthiest patient
  - ex. *"Who would you assess/check first after report?"* -> the highest priority/sickest patient
- **Priority answers always have 4 parts:**
  a) **age**
  b) **gender**
  c) **a diagnosis**
  d) **a modifying phrase**
  e) ex. *a 10 yr. old male with hypospadias who is throwing up bile stained emesis*
  f) 2 of these are irrelevant & you do not need them in your answer = age & gender
  *** pay attention to age in pediatric teaching but in *prioritization* questions, you do not
  - **the *modifying phrase* is the most important**
  ** **do not get stuck doing ABC's**

4 Rules for Prioritization:

- a) **acute beats chronic**
  - an acutely ill person is a higher priority
- b) **fresh post-op (12 hrs.) beats medical/other surgical**
- c) **unstable beats stable**
  - know the words in a modifying phrase that mean stable & unstable

STABLE	UNSTABLE
stable	unstable
chronic illness	acute illness
post-op greater than 12 hours	post-op less than 12 hours
local or regional anesthesia	general anesthesia
lab abnormalities of an **A** or **B** level	lab abnormalities of a **C** or **D** level
"ready for discharge", "to be discharged", "admitted longer than 24 hours ago"	"not ready for discharge", "newly admitted", "newly diagnosed", "admitted less than 24 hrs. ago"
unchanged assessments	changing/changed assessments
PT is experiencing the typical expected S&S of the disease with which they were diagnosed	PT is experiencing *unexpected* S&S

  - do not mix up symptom severity w/ unexpected symptoms (ex. PT w/ kidney stones having severe pain is lower priority than PT w/ mild chest pains when having an x-ray
  - **4 things that always make you unstable** (regardless of whether it is expected or not):
    i. **hemorrhage** (do not confuse w/ *bleeding*)
    ii. **high fevers (over 105)** -> risk for *seizure*
    iii. **hypoglycemia** -> even if it is a normal value (if they say it, it is it)
    iv. **pulselessness & breathlessness** *unwitnessed* accident
    -> it is lowest priority only at the scene of a
- 3 things that result in a *black tag* in an *unwitnessed accident*: (tag them black & ship them last)
  - pulselessness
  - breathlessness
  - fixed & dilated pupils -> brain death
- d) **the more vital the organ, the higher the priority —> only use as a tie breaker**
  - talking about the organ of the *modifying phrase* (not the diagnosis)
  - **Order of Organ Vitality:**
    i. brain
    ii. lungs
    iii. heart
    iv. liver
    v. kidney
    vi. pancreas
    *** after that no one agrees

DELEGATION:

- **DO NOT delegate the following to LPN's:**

  a) **starting an IV**
  -> do not assume they have IV certification
  b) **hanging or mixing IV meds**
  c) **pushing IV push meds**
  ** *they can maintain & document IV flow*
  d) **administer blood or mess w/ central lines**
  -> no flushing
  -> if only option is "change central line dressing", then pick that otherwise, they should not do that either
  e) **cannot plan care**
  -> they *implement* RN's plan
  f) **cannot perform or develop teaching**
  -> they can *reinforce* teaching
  g) **cannot take care of unstable PT's**
  h) **not allowed to do the *first* of anything**
  -> should be the RN (because they can *plan*)
  i) **cannot do the following assessments:**
  - admission
  - discharge
  - transfer
  - the *first* assessment after there has been a change
- **DO NOT delegate the following to a nursing aid:**
  —> they are *unlicensed* personnel
  - **no charting**
  -> though, they can chart what *they* did but *not about the PT*
  - **cannot give meds**
  -> except for topical, *OTC* barrier creams
  - **no assessments** (except for vitals & accuchecks)
  -> for cost reasons
  -> watch for words like "*evaluating*"
  - **no treatments** (except for enema's)
  - be cautious about allowing them to catheterize (if that's the only option, pick that)
- **Aids can do ADL's** (i.e. bed baths etc.) **but should not do the *first* of anything**

- In extended care facilities, LPN's can many of the things listed that they cannot do because in that setting, the PT population is a generally stable one.
- **DO NOT DELEGATE TO THE FAMILY *SAFETY RESPONSIBILITIES***
  - the nurse is responsible for that
  - **you cannot delegate safety to a non-hospital caregiver**
    -> you can to a sitter but they can only do what you teach them to do and *document* that you taught them (& their competency)
  - ex. If a PT's family member asks that you remove restraints while they are there because they are watching them and that you can put them back on once they leave -> NO

STAFF MANAGEMENT:

- How do you intervene w/ inappropriate behavior of staff? (*handling your staff when they do stupid things*)
- **There are always 4 answers:**
  *** the same answers show up all the time
  a) ***tell supervisor***
  b) ***confront them and/or take over immediately***
  c) ***at a later date just talk to them***
  d) ***ignore it*** —> NEVER the answer (you never ignore inappropriate behavior by staff)
  - the first 3 could be right *or* wrong depending on the situation so you need to learn how to choose between them
- **When you get a staff question ask yourself:**
  a) *first* -> **"Is what they are doing illegal?"**
  YES = *always* choose "tell supervisor"
  NO = go to the next question
  b) **"Is anyone (PT or staff) in immediate danger of physical or psychological harm?"**
  YES = "confront immediately &/or take over" (so no one gets hurt; "telling supervisor" delays you doing something putting others at risk)
  NO = go to next question
  c) **"Is this behavior legal, not harmful, but simply inappropriate?"**
  YES = "approach later", no rush
  *** if a situation is *both illegal & harmful* you need to confront/do something first & then call supervisor (because you do not want to add more risk for harm by delaying) BUT if it is just illegal, tell supervisor

LOCATIONS

- *point & click* questions
- **abdomen quadrants:**
  - i.e. what quadrant an organ is located etc.
- **locations for auscultating the heart valves:**
  -> you have to know exact spots
  - **aortic** = 2nd intercostal at R sternal border
  - **pulmonic** = 2nd intercostal at L sternal border
  - **tricuspid** = 4th intercostal at L sternal border
  - **mitral** = 5th intercostal at mid-clavicular line (where the apical pulse is)
- **pulses:**
  - **carotid** - **femoral** - **posterior tibial**
  - **radial** - **popliteal** - **dorsalis pedis**
  - **brachial**

TEST TAKING TIPS

- expect to do guessing on the test
  -> that's the nature of computer adaptive testing
- ***How do you guess???***
  a) use your knowledge first!
  b) common sense
  c) a guessing strategy

GUESSING Strategies: (*ONLY* when you do not know what's going on; use knowledge & common sense first!)

- **Psych Questions:**
  - the best answer (if you are totally clueless) is **"the nurse will examine their own feelings about…"**
    -> that way you do not counter-transfer (ex. the PT reminds you of your dad & you didn't like your dad so you treat him badly)
  - **"establish a trust relationship"**
    -> if you pick something else you are saying it is not that important to establish trust
    -> BUT use common sense first! (ex. if a PT is coming at you w/ a knife, safety first duh!)
- **Nutrition/Food Questions:**
  - *in a tie*, pick **chicken** (obvs. not fried)
  - if chicken is not there, pick fish
    -> *not* shellfish
  - **never pick *casseroles* for children** (will not eat it)
  - **never mix medication in children's food**
    -> if doing it for an adult, *ask permission first*
  - **toddlers = *finger-food***
    -> might not be very healthy but they need stuff that they can eat on the run
  - **preschoolers** = leave them alone (one meal a day is ok -> they eat when their hungry & usually picky)
- **Pharmacology:**
  - the most common area tested is *side effects*
    -> do not memorize dosages! routes! frequencies!
    .-> **FOCUS ON SIDE EFFECTS** = we assess side effects, see if things are working (do not prescribe)

- **if you know what a drug does but you do not know the side effects:**
  -> pick a side effect in the same body system where the drug is working
- **if you have no clue what the drug is:**
  -> see if it is PO & if it is pick a GI side effect
- **never tell a child that medicine is *candy***

- **OB Questions:**
  - **"check fetal heart rate"**
- **Med-surg Questions:**
  - first thing you **assess** = **LOC** (not airway)
    -> before you do compressions you call out the PT's name/try to wake them up which is LOC
  - first thing you **do** = **establish an airway**
- **Pediatric Questions:**

  - growth & development questions are all based on the principle "**always give the child more time**" (to grow & develop, do not rush it)

  -> **3 Rules:**
  i. **when in *doubt*, call it WNL** (in med-surg, when in doubt, call it *abnormal* so you do not make safety mistakes)
  ii. **when in *doubt*, pick the older age** (the older age of the 2 that it could be, not the old*est*; gives more time)
  iii. **when in *doubt*, pick the easier task** (gives more time for the child to learn it)

- **General *guessing* skills:**
  - **rule out absolutes**
    -> generally not good answers because they do not apply to many situations
    -> do not forget your knowledge & common sense (i.e. certain things are absolute like "never push IV K+" or doing checks for med. administration)
  - **if 2 answers say the same thing, neither is right**
  - **if 2 answers are *opposite*, one of them is probably right**
  - the umbrella strategy:
    -> **"which answer is more global"**
    * ex. certain questions where you want to say "all of the above" but that's not an option -> look for an answer that is broad enough that covers all the things you need (covers all the other answers)
  - if the question gives you **4 right answers** & asks you to pick the one that is highest priority:
    -> different from picking between 4 PT's; usually the question is about 1 PT & you are picking between 4 different *needs*
    -> think "**worst consequences**" for each option & pick the answer that has the worst outcome if you do not pick it
  - **when you are stuck between 2 answers, read the question (it will have the clue!!)**

- **Sesame Street rule:**
  - you can use the rule when (*& ONLY when*) your only remaining option is to give up -> **WHEN NOTHING ELSE WORKS**
  - **" 3 of these things is not like the other"**
  - *the right answer tends to be different than the others*
    -> because it is the only one which is correct
    -> usually the more unique & different option
  - the wrong answers are similar because they share something in common
    -> they are all wrong

- **do not be tempted to answer a question based on your inexperience instead of your knowledge:**

  - *base answers on what you know, not what you do not know*
  - if you do not know something in a question, pull that out and focus on the things you do know
  - USE COMMON SENSE! boards test obscure things to test your common sense
- **if something *really* seems right, it probably is**
  - go w/ your gut!
    -> unless you can prove that a different answer is superior (not "just as good")

3 Expectations you are NOT Allowed to Have:

- expectations that are not met breed negativity which badly affects your test taking
- a) **do not expect 85 questions**
  - prepare yourself for 250 questions
  - if you get to 200 it does not mean you are failing (it would have shut off earlier if you were)
- b) **do not expect to know everything**
  - because it is computer adaptive -> it will give you stuff you do not know
  - know what everyone else needs to know
- c) **do not expect everything to go right**
  - do not expect a perfect day