

# 50 Bonus High Yield Facts

1. Deacetylation/methylation concepts - What is mute what is active?
  - a. Methyl Mute - Transcription is minimal/silent
  - b. Acetylated - Active, thus transcriptionally active
2. Demographic graph with a lot of kids, very little adults, what is the consequence?
  - a. Example: Less workforce
3. Biopsy of thyroid with a patient with de quervain what will you find?
  - a. Granulomas
4. 25 cholecalciferol normal but decreased 1,25 vit D - then what is the problem? Renal failure = secondary Hyperparathyroidism
5. Osteogenesis Imperfecta - why do they have blue eye?
  - a. Choroidal vein
6. Heart abnormality with marfan?
  - a. Mitral Valve Prolapse
7. Esophageal varices which artery
  - a. L gastric
8. Lymph drainage for external hemorrhoids vs internal hemorrhoids

Distinction	Above Pectinate line	Below Pectinate line
Destination of lymph drainage	Internal iliac lymph nodes (pararectal lymph nodes)	Superficial inguinal lymph nodes (Below Hilton's line)
Epithelium	Columnar epithelium (as is most of the digestive tract – the line represents the end of the part derived from the hind gut)	Stratified squamous epithelium, non keratinized (until Hilton's white line, where the anal verge becomes continuous with the perianal skin containing keratinized epithelium)
Embryological origin	Endoderm	Ecotoderm
Artery	Superior rectal artery	Middle & inferior rectal arteries
Vein	Superior rectal vein	Middle & inferior rectal veins
Hemorrhoids classification	Internal hemorrhoids (not painful)	External hemorrhoids (painful)
Nerves	Inferior hypogastric plexus Symp L1, L2 & parasymp S2, S3, S4	Inferior rectal nerves

- a.
- b. Know this chart
- c. Summary
  - i. Above Pectinate Line
    1. Internal iliac nodes and superior rectal vein
  - ii. Below Pectinate line
    1. Superficial inguinal nodes and inferior rectal vein

## 9. Para aortic lymph from the testicles

## 10. Defense mechanisms

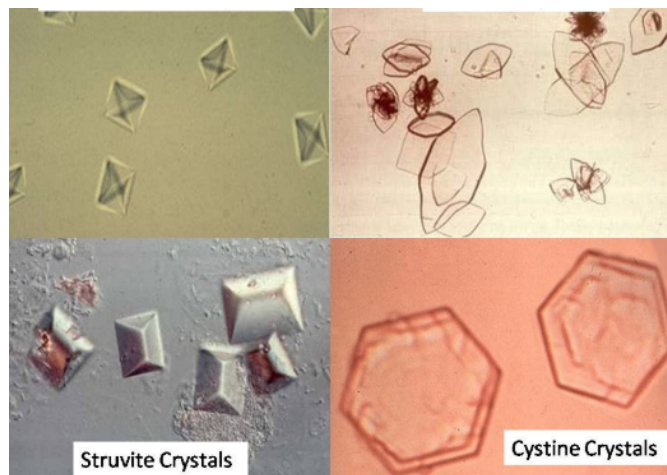
Defense Mechanism	Description	Example
Repression	Unknowingly placing an unpleasant memory or thought in the unconscious	Not remembering a traumatic incident in which you witnessed a crime
Regression	Reverting back to immature behavior from an earlier stage of development	Throwing temper tantrums as an adult when you don't get your way
Displacement	Redirecting unacceptable feelings from the original source to a safer, substitute target	Taking your anger toward your boss out on your spouse or children by yelling at them and not your boss
Sublimation	Replacing socially unacceptable impulses with socially acceptable behavior	Channeling aggressive drives into playing football or inappropriate sexual desires into art
Reaction formation	Acting in exactly the opposite way to one's unacceptable impulses	Being overprotective of and lavishing attention on an unwanted child
Projection	Attributing one's own unacceptable feelings and thoughts to others and not yourself	Accusing your boyfriend of cheating on you because you have felt like cheating on him
Rationalization	Creating false excuses for one's unacceptable feelings, thoughts, or behavior	Justifying cheating on an exam by saying that everyone else cheats

a.

## 11. Calculate NNT

- a. Youtube is great for this as well
  - i. <https://www.youtube.com/watch?v=VMI9UuNqoGI>

12. Macrocytic anemia + **phalange problems (extra thumbs)** - Diamond blackfan anemia
  
13. Hardy Weinberg - perhaps CF example
  - a. Free sample:  
<https://www.khanacademy.org/science/biology/her/heredity-and-genetics/e/hardy-weinberg>
  
14. Kidney stones whats most common type
  - a. Calcium Stone - envelope shaped
  - b. Uric acid stone - rhomboid shape
  - c. Cystine stone - hexagonal shape
  - d. Struvite stone - RIP coffin shaped

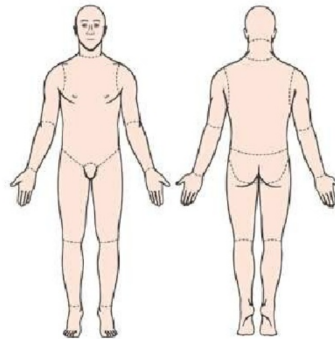


15. Cirrhosis Patient will have flapping tremor called?
  - a. Asterix
  
16. Murmur questions: You must know them:
  - a. VSD Holosystolic LSB
  - b. PDA Continuous machine like
  - c. ASD Split S2
  - d. Holosystolic at Apex - Mitral Regurg
  - e. MVP - Mid Systolic Click
  - f. Open snap then diastolic rumble at apex- Mitral stenosis

17. PCOS
- Increased LH level initially during cycle instead of FSH
  - But overall both LH and FSH are increased
18. Rule of 9 burn patient (image at bottom)
- Just be able to estimate in percentages

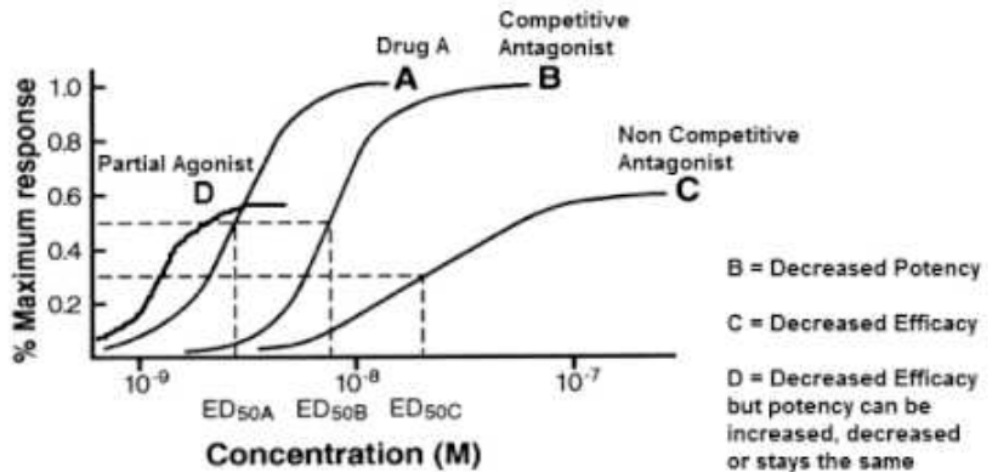
**Rule of Nines Chart**

Head & neck	9%
Arms	9%
Ant. trunk	18%
Post. trunk	18%
Legs	18%
Perineum	1%
<b>TOTAL</b>	<b>100%</b>

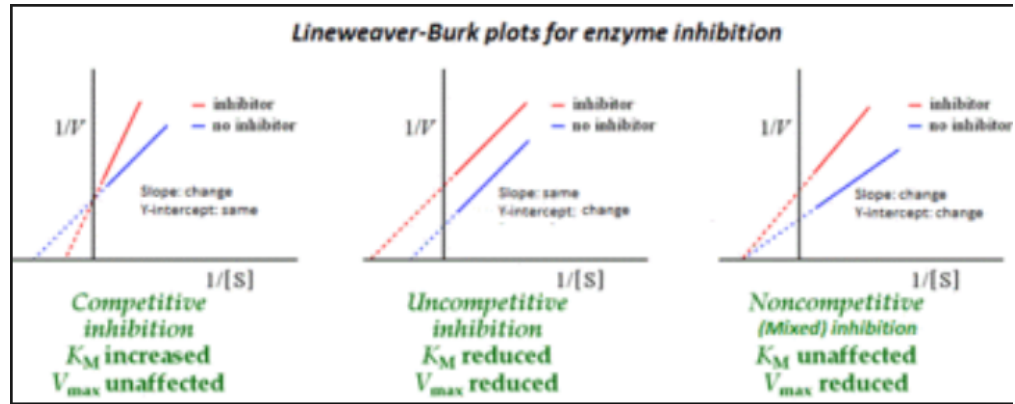


b. \_\_\_\_\_

19. Partial agonist vs antagonist vs comp vs non comp graphs (LWburk)

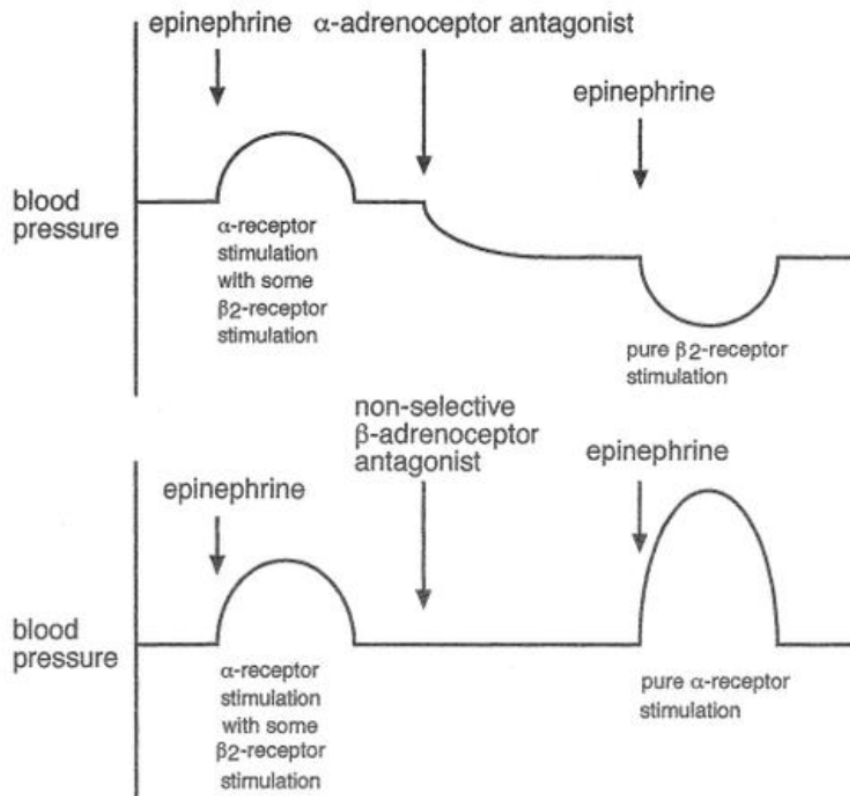


- a. \_\_\_\_\_
- Be able to label partial agonist, competitive antagonist and non competitive antagonist



- c. i. Be able to label competitive inhibition and noncompetitive inhibition

20. Epinephrine and Beta blocker, what is the effect



- a. i. Understand how EPI will affect the body if a beta blocker would be given first.

21. Acid base disturbance on diarrhea

- a. Metabolic Alkalosis

## Metabolic Acid-base Disorders: summary

### METABOLIC ACIDOSIS

$\downarrow \text{HCO}_3^-$  &  $\downarrow \text{pH}$

- Increased anion gap
  - lactic acidosis; ketoacidosis; drug poisonings (e.g., aspirin, ethylene glycol, methanol)
- Normal anion gap
  - diarrhea; some kidney problems (e.g., renal tubular acidosis, interstitial nephritis)

### METABOLIC ALKALOSIS

$\uparrow \text{HCO}_3^-$  &  $\uparrow \text{pH}$

- Chloride responsive (responds to NaCl or KCl therapy): contraction alkalosis, diuretics, corticosteroids, gastric suctioning, vomiting
- Chloride resistant: any hyperaldosterone state (e.g., Cushing's syndrome, Bartter's syndrome, severe  $\text{K}^+$  depletion)

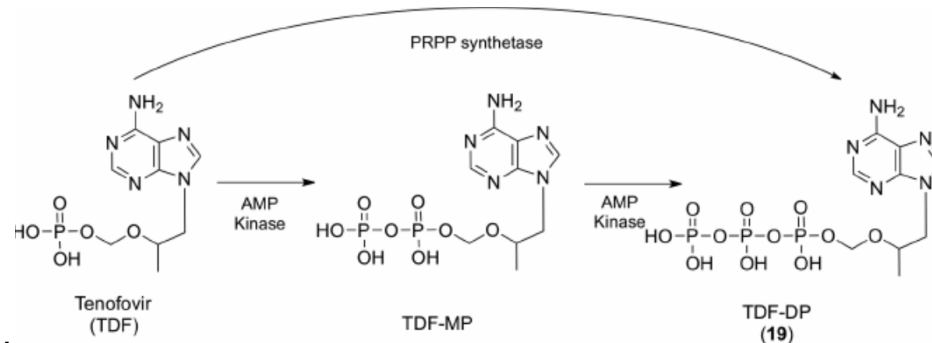
b.

## 22. Tenofovir

### Nucleotide reverse transcriptase inhibitors (NTRTIs):

- E.g. Tenofovir (TFV)
- **Mechanism of action:**
- First gets hydrolysed in liver
- Then gets phosphorylated to an active Tenofovir diphosphate
- This competitively inhibits HIV reverse transcriptase enzyme and causes termination of chain elongation after getting incorporate into viral DNA

a.



b.

## 23. HIV CD4 < 50 start prophylaxis for Toxo prevention

a. Trimethoprim (TMP) and sulfamethoxazole (SMZ)

## 24. Pulmonary hypertension – endothelin/NO/Prostacyclin up or down

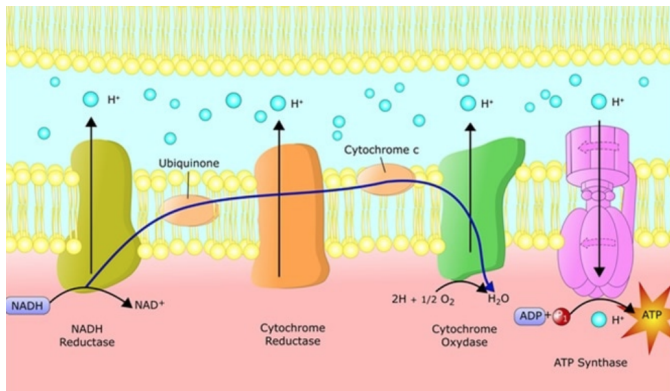
a. They all are increased\*

25. Minimal change disease
  - a. Commonly affect children
  - b. Reversible
  - c. Selective loss of protein in urine such as albumin
  
26. Schwannoma commonly found at Cerebellopontine angle in patient with:
  - a. NF2
  
27. VwF deficiency
  - a. Will have low factor VIII thus-> Increased Bleeding time and PTT
  
28. Anatomy – pollicis brevis injury – cant put thumb in palm.
  
29. Cannot abduct thumb, which nerve? Median
  
30. Holoprosencephaly – sonic hedgehog pathway dysfunction
  
31. Klinefelter what mutation? Nondisjunction
  
32. P450 subtype of Atorvastatin – **CYP 3A4**
  
33. HepE whats next step? Order BhcG  
-Preg women have high mortality rate with Hep E
  
34. Markers for Hep B - Must know them

<u>Marker</u>	<u>Meaning</u>	Acute infection	Window period	Chronic infection	Remote infection (cleared)	Immunization	Inactive chronic carrier
HBcAb	Exposure	+	+	+	+	-	+
HBsAg	Infection	+	-	+	-	-	-
HBsAb	Immunity	-	-	-	+	+	-

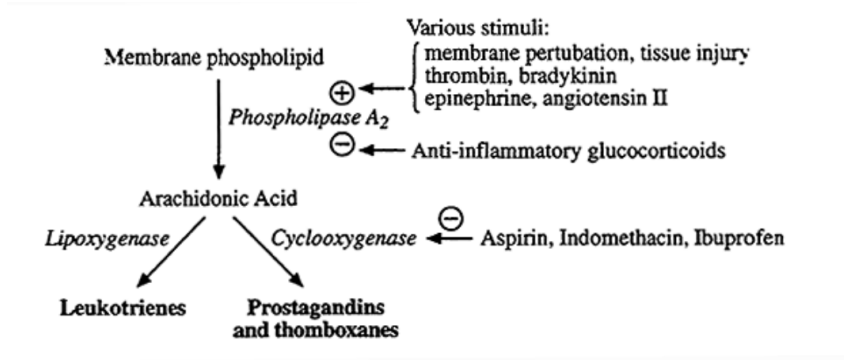
- a. Moral of the story
- b. HbeAg = Marker of Infectivity
- c. HbsAg = Active infection

35. Colon cancer – microsatellite instability
  - a. Hereditary Nonpolyposis Colorectal Cancer (HNPCC) / Lynch syndrome
  - b. A single polyp can turn to cancer due to loss-of-function in DNA mismatch repair genes (MSH2 gene)
  
36. Raw eggs Biotin deficiency, what does not work? What pathway affected? Pyruvate carboxylase
  
37. Rotenone/pesticide on patient: Can treat with: glutathione, N-acetylcysteine, and vitamin C



Compound	Site of inhibition
CO (carbon monoxide)	Cytochrome a/a3
CN (cyanide)	Cytochrome a/a3
Antimycin	Cytochrome b/c1
Doxorubicin	CoQ
Rotenone (pesticide)	NADH dehydrogenase

38. Leukocyte Adhesion Defect = problem with Integrin defect
  
39. Precursor of arachidonic acid - Comes from Membrane lipids

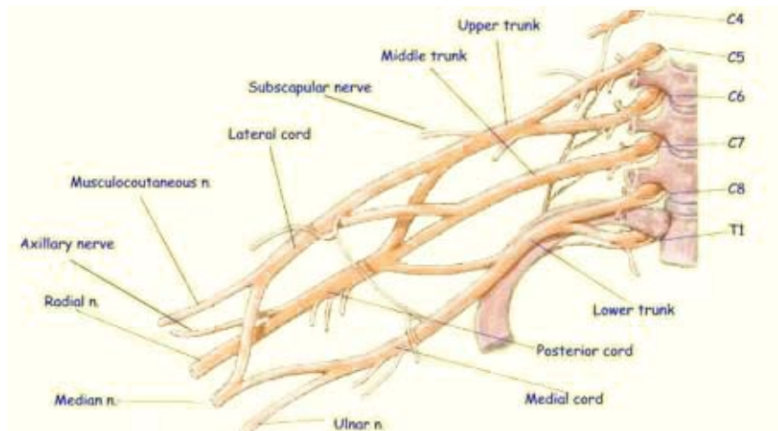


- Know where corticosteroids work - be able to label it and know that it inhibits phospholipase A 2

40. Elderly abuse whats next step - Report it Immediately!

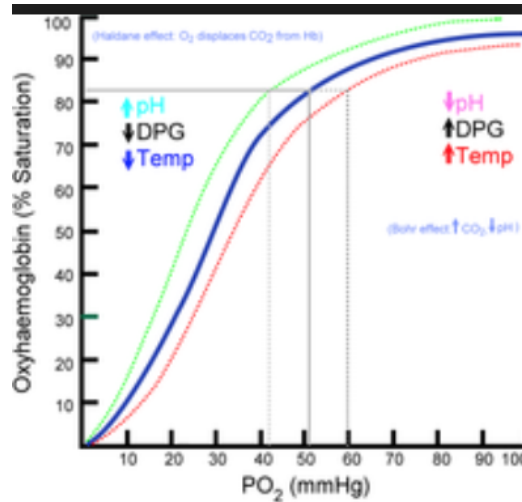
41. Brachial plexus picture, can't flex forearm

- Injured Musculoskeletal nerve. Be able to label it on a diagram like this



b.

- Pt going for a hike, give acetazolamide, what happens to hemoglobin curve (point on graph): It will shift to the RIGHT



a.

- 43. Amiodarone Side effect -> pulmonary fibrosis
- 44. EKG of a patient with hyperkalemia will reveal peaked T waves
- 45. I cell disease – what its the organelle = Lysosome
- 46. Phases 1,2,3 clinical trials

	Study Sample	Purpose
<b>Phase I</b>	Small number of pts, usually healthy volunteers	Assess safety, toxicity, and pharmacokinetics
<b>Phase II</b>	Small number of pts with disease of interest	Assesses treatment efficacy, optimal dosing, and adverse effects
<b>Phase III</b>	Large number of pts randomly assigned to either the treatment under investigation or to the best available treatment (or placebo)	Compares the new treatment to the current standard of care. Is more convincing if double-blind

- 47. Mechanism of craving – dopamine and nucleus accumbens
- 48. Location of Viagra on Histology cross section of penis

49. Patient with asthma do NOT give: Aspirin
50. Pregnant women with Tick - then treat with Amoxicillin, NOT doxycycline