Pharmacology – Test 2

1. The passage of most drug molecules across cell membranes along a concentration gradient is achieved by Passive diffusion

2. The onset of action of a drug is primarily determined by its rate of absorption.

3. After receiving 1.8 cc of a local anesthetic agent with epinephrine 1:100,000, a healthy adult patient with functional capacity in excess of 7 METs became pale, diaphoretic and experienced a brief episode of syncope. Your most likely diagnosis would be Vasovagal Response.

4. Cyclooxygenase (COX)-1 inhibitors impair platelet adhesion and aggregation by inhibiting the synthesis of Thromboxane A2.

5. Which of the following drugs is an opioid antagonist, which may be used to reverse apnea and coma due to opioid toxicity? NALOXONE

6. All of the following pharmacological effects are attributed to the vasoconstrictor in local anesthetic formulations, except which one? True: reduce systemic toxicity, prolong the LA effect, Reduce Bleeding

7. Which of the following local anesthetic agents is likely to produce significant vasopressive effect? Cocaine.

8. Which of the following is not a pharmacological property of penicillin V? narrow spectrum G+ cocci + oral anaerobes.
V = acid Stable (oral admin) G = acid Labile (IV).

9. Which of the following antibacterial agents is a pro-drug converted to an active metabolite by bacterial nitroreductase, which binds bacterial DNA, inhibits nucleic acid synthesis, is beta-lactamase resistant, and has good activity against obligate oral anaerobes? Metronidazole – G⁻ and G⁺, doesn't kill facultative - only obligate anaerobes.
- has Disulfiram Rxn w/ alcohol.

10. All of the following antibacterial agents target bacterial ribosomal enzymes and interfere with the translation of the mRNA code essential for protein synthesis except which one? Erythromycin, Clarithromycin, azithromycin, Clindamycin → 50
Tetracycline (doxy, mino), Aminoglycosides (gentamicin, tobramycin) → 30 s

11. Which of the following antibacterial agents would be the most appropriate empirical drug of choice for the treatment of an anaerobic odontogenic infection in a patient with a history of anaphylactic reaction to beta-lactam antibiotics and a history of significant cardiac arrhythmias? Slide 64 → Not Azithro, NOT Penicillin, Not Clarithro
* Try Clindamycin OR Azithromycin.

12. When a patient presents with an unresolved odontogenic infection following treatment with a beta-lactam antibacterial agent or a severe odontogenic infection with trismus, the empirical drug of choice would be → Metronidazole or Clindamycin?

13. The combination antibacterial formulation trimethoprim and sulfamethoxazole Co-Trimoxazole – combination to block folate synthesis (dihydrofolate reductase inhibitors)

14. Gastrointestinal disturbances associated with the oral administration of antibacterial drugs may include all of the following except which one? Slide 69
Nausea, Vomiting, Retching, diarrhea, cramping (pseudomembranous colitis)

15. Most bacterial resistance to antibacterial agents is the result of conjugation, a process characterized as Slide 45 Transfer of plasmids, Not species specific

16. Resistance to macrolide antibacterial agents has been related to the ability of certain microorganisms to block 50S ribosomal subunits and because 50S microsomal receptor-sites overlap, these bacteria will also be resistant to Clindamycin Slide 47

17. When clavulanic acid is combined with amoxicillin (or other antibacterial agents), it → is more broad spectrum → kills G+ (amoxi) and blocks β-lactamases.

18. Which of the following mechanisms may explain why bacteria in a biofilm appear to be 1000-fold more resistant to antibacterial agents than they are in t ir planktonic form? Slide 50
(1) The drug has to get through the surface / 3 waste products block drug from working
(2) some bacteria become Resistant phenotype

19. Which of the following protein synthesis inhibitors bind(s) to 30S ribosomal subunit, block(s) the formation of the 70S initiation complex, effect(s) the production of abnormal polypeptides, and is(are) therefore bactericidal? Slide 40 Aminoglycosides.

20. All of the following are documented adverse drug effects associated with the tetracyclines except which one? Slide 39 Tooth discoloration, developmental bone + teeth abnormality, Photosensitivity; Chelation of Ions (Ca^{++}).

21. Which of the following antibacterial agents has been associated with a disulfiram-like reaction when taken concurrently with alcohol? Metronidazole

22. The therapeutic index of an antibacterial agent is an indicator of the drug's selectivity for a target (metabolic pathway) that is unique to bacteria / not host.

23. The access of antibacterial agents to the site of infection depends on such factors as slide 57
Absorption, distribution, metabolism ? (Pharmacokinetics.)

24. Substantial morbidity and mortality associated with antibacterial chemotherapy is primarily related to Allergic Rxns. (T-cell delayed hypersensitivity, IGE-mediated immediate hypersensitivity, Cross Allergy). 69

25. Taking into consideration their mechanisms of action, which of the following antibacterial agents has the fewest toxic effects? Penicillin

26. All of the following characteristics are attributable to the aminoglycosides except which one? Slide 40 - block 30S ribosomes, Inhibit G-ve enterics, Bactericidal, ototoxicity, Nephrotoxicity, neuromuscular Blockade, Most toxic antibacterial.

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28. ~~All of the following are mechanisms of action for antiviral agents except which one?~~
(1) Inhibit Viral attachment and entry (2) Inhibit viral uncoating (3) Inhibit Viral Genome Replication (4) Protease Inhibitors (inhibit maturation) (5) Neuraminase inhibitors (inhibit Viral release)

29. Which of the following drugs inhibit viral uncoating by blocking the influx of protons through proton channels in the viral envelop and prevent pH-dependent dissociation of the viral matrix protein from the viral RNA genome of the influenza virus?
Amantadine / Rimantadine

slide 13 or pg 5 Table 2
- Acyclovir, Valacyclovir, Penciclovir, famciclovir
NOT: Ganciclovir, Valganciclovir, Cidofovir

30. All of the following drugs are nucleoside analogues, which inhibit HSV and VZV genome replication by inhibiting DNA polymerases and, as they become incorporated into the growing DNA chain, terminate elongation EXCEPT which one?

31. Which of the following drugs are nucleoside analogues, which inhibit HIV replication by inhibiting DNA polymerase (reverse transcriptase) and, as they become incorporated into the DNA chain, terminate elongation? slide 17, 18, pg 5 table 3
Abacavir, Didanosine, Emtricitabine, Stavudine, Tenofovir, Zalcitabine, Zidovudine, Lamivudine.

32. Protease inhibitors (amprenavir, atazanavir, indinavir, lopinavir, nelfinavir, ritonavir, and saquinavir) block the cleavage of viral proteins during assembly and maturation and are used in combination Anti HIV therapy. - slide 20

33. Which of the following drugs appears to inhibit viral RNA polymerase and in combination with interferon is used in the treatment of chronic HCV infection? slide 22
Ribavirin

34. All of the following statements are correct about the azole antifungal agents (ketoconazole, itraconazole, voriconazole, and fluconazole,) EXCEPT which one? slide 6/pg 2
- Azoles block ergosterol synthesis via blocking fungus P-450 enzyme, 14α-sterol demethylase, Also inhibits hepatic P-450, drug-drug interactions
- Most adverse effect is hepatotoxicity

35. Toxic reactions to amphotericin B include slide 10 "cytokine storm" - fever, chills, hypotension. Nephrotoxicity, hematologic toxicity - anemia

37. Because of severe systemic toxicity, the use of nystatin is strictly limited to the treatment of superficial infections of the Skin + ORAL/Vaginal Mucosa (pg 3 or slide 10)

38. Which of the following antifungal agents is an inhibitor of DNA synthesis? slide 11/pg 3
Flucytosine

39. Which of the following antifungal agents inhibits the assembly of microtubules and the accessory proteins essential for the formation of the mitotic spindle, and tends to accumulate in the superficial layer of the skin? Griseofulvin
- slide 11
- pg 4

Pharmacology – Test 2

EXAM 2 #4 1. The passage of most drug molecules across cell membranes along a concentration gradient is achieved by A: PASSIVE DIFFUSION

EXAM 1 #6 2. The onset of action of a drug is primarily determined by its rate of ABSORPTION

EXAM 1 #25 3. After receiving 1.8 cc of a local anesthetic agent with epinephrine 1:100,000, a healthy adult patient with functional capacity in excess of 7 METs became pale, diaphoretic and experienced a brief episode of syncope. Your most likely diagnosis would be VASOVAGAL RESPONSE

EXAM 2 #31 4. Cyclooxygenase (COX)-1 inhibitors impair platelet adhesion and aggregation by inhibiting the synthesis of A: THROMBOXANE A2

EXAM 1 #34 5. Which of the following drugs is an opioid antagonist, which may be used to reverse apnea and coma due to opioid toxicity? A: NALOXONE

Pocket 1,1:25 EXAM 1 #37 6. All of the following pharmacological effects are attributed to the vasoconstrictor in local anesthetic formulations, except which one? A: TO decrease Onset of Action

★ TRUE - Reduce Systemic Toxicity - major reason
TRUE - PROLONG
TRUE - Reduce Bleeding

EXAM 1 #38 7. Which of the following local anesthetic agents is likely to produce significant vasopressive effect? A: COCAINE

1,1:26 8. Which of the following is not a pharmacological property of penicillin V? A: Predictable β-lactamase Resistance

bitter, Gram + cocci, most anaerobes, β-lactamase susceptible, hypersensitivity rxns
★ ACID STABLE NOT LABILE (resist) NARROW SPECTRUM

1,1 : 33 42 9. Which of the following antibacterial agents is a pro-drug converted to an active metabolite by bacterial nitroreductase, which binds bacterial DNA, inhibits nucleic acid synthesis, is beta-lactamase resistant, and has good activity against obligate oral anaerobes? A: METRONIDAZOLE

Gram +
USE PEN - FOR FACULTATIVE
DON'T DRINK BIT W THIS

1,1 : 37-40 10. All of the following antibacterial agents target bacterial ribosomal enzymes and interfere with the translation of the mRNA code essential for protein synthesis except which one?

a) Macrolides
b) clindamycin
c) cephalosporin
d) chloramphenicol
e) vanco

50S ERYTHROMYCIN
50S CLARITHROMYCIN
AZITHROMYCIN
50S CLINDAMYCIN
30S TETRACYCLINES (DOXYCYCLINE, MINOCYCLINE)
30S AMINOGLYCOSIDES (GENTAMICIN, TOBRAMYCIN, AMIKACIN)

1,2,1 : 64 11. Which of the following antibacterial agents would be the most appropriate empirical drug of choice for the treatment of an anaerobic odontogenic infection in a patient with a history of anaphylactic reaction to beta-lactam antibiotics and a history of significant cardiac arrhythmias? A: CLINDAMYCIN

AZITHROMYCIN - FOR allergy to β-lactams, but causes Heart Arrhythmias

Anaphylactic - AZITHROMYCIN
Delayed RXN - cephalosporins

? P 2,1 65 12. When a patient presents with an unresolved odontogenic infection following treatment with a beta-lactam antibacterial agent or a severe odontogenic infection with trismus, the empirical drug of choice would be A: CLINDAMYCIN

clindamycin OR METRO?
not metro b/c you always prescribe w/ penicillin.

P 2,1 31 13. The combination antibacterial formulation trimethoprim and sulfamethoxazole A: sequentially blocks folate pathway, produces synergism in inhibiting DNA + RNA synth. and is bacteriostatic

CO-TRIMOXAZOLE - COMBINED DRUG TO DOUBLE ATTACK FOLATE NEEDED FOR DNA SYNTH.

A: all except pseudomembranous colitis 2° to candidiasis.

14. Gastrointestinal disturbances associated with the oral administration of antibacterial drugs may include all of the following except which one? NAUSEA, RETCHING, VOMITING DIARRHEA ABDOMINAL CRAMPING – PSEUDOMEMBRANOUS COLITIS (C. DIFFICILE)

A: Pseudomembranous colitis / Abdominal Cramping

15. Most bacterial resistance to antibacterial agents is the result of conjugation, a process characterized as xfer plasmids from one bact. to another * NOT SPECIES SPECIFIC

16. Resistance to macrolide antibacterial agents has been related to the ability of certain microorganisms to block 50S ribosomal subunits and because 50S microsomal receptor-sites overlap, these bacteria will also be resistant to A: CLINDAMYCIN

17. When clavulanic acid is combined with amoxicillin (or other antibacterial agents), it
A: decreases hydrolysis by β-lactamase, DESTROYS β-lactamases

18. Which of the following mechanisms may explain why bacteria in a biofilm appear to be 1000-fold more resistant to antibacterial agents than they are in their planktonic form? BIOFILM LAYERS PROTECT BACTERIA FROM ANTIBIOTICS; SOME BACTERIA GO INTO RESISTANT PHENOTYPE (DORMANT STATE) 1 – LAYERS 2 – DORMANT 3 – WASTE PRODUCTS STOP DRUG FROM WORKING
A: A, B + C correct → No Quantum sensing that facilitates gene transfer.

19. Which of the following protein synthesis inhibitors bind(s) to 30S ribosomal subunit, block(s) the formation of the 70S initiation complex, effect(s) the production of abnormal polypeptides, and is(are) therefore bactericidal? AMINOGLYCOSIDES (GENTAMICIN, TOBRAMYCIN, AMIKACIN)
A: AMINOGLYCOSIDES

20. All of the following are documented adverse drug effects associated with the tetracyclines except which one? Teeth & Bone Deformations
SEE SLIDE A: TERATOGENIC EFFECTS

21. Which of the following antibacterial agents has been associated with a disulfiram-like reaction when taken concurrently with alcohol? METRONIDAZOLE
A: Metronidazole

22. The therapeutic index of an antibacterial agent is an indicator of the drug's selectivity for a target (metabolic pathway) that is TARGET UNIQUE TO BACT.; TARGET SIMILAR, BUT NOT IDENTICAL; TARGET SHARED, BUT NOT IMPORTANT TO HOST
A B + C correct (Not necessary for Bacterial survival was choice D)

23. The access of antibacterial agents to the site of infection depends on such factors as ABSORPTION, DISTRIBUTION, METABOLISM, EXCRETION (PHARMACOKINETIC CONSIDERATIONS)

24. Substantial morbidity and mortality associated with antibacterial chemotherapy is primarily related to ALLERGIC RXNS – T-cell – IgE – Cross-Allergy
A: ALLERGIES

25. Taking into consideration their mechanisms of action, which of the following antibacterial agents has the fewest toxic effects? PENICILLIN (β-lactam) SAFEST
A: β-lactams

26. All of the following characteristics are attributable to the aminoglycosides except which one? gram – ON TOXIC ORGANISMS; BACTERICIDAL; NEUROMUSCULAR BLOCKADE; NEPHROTOXIC DRUG
A: Not Bacteriostatic activity

28. All of the following are mechanisms of action for antiviral agents except which one? ① ATTACHMENT & ENTRY ② VIRAL UNCOATING ③ GENOME REPLICATION ④ PROTEASE ⑤ NEURAMINIDASE
A: For Blocking 50S, 30S Ribosomes

29. Which of the following drugs inhibit viral uncoating by blocking the influx of protons through proton channels in the viral envelop and prevent pH-dependent dissociation of the viral matrix protein from the viral RNA genome of the influenza virus?
A: AMANTADINE / RIMANTADINE B + C correct.

13 30. All of the following drugs are nucleoside analogues, which inhibit HSV and VZV genome replication by inhibiting DNA polymerases and, as they become incorporated into the growing DNA chain, terminate elongation EXCEPT which one?

ACYCLOVIR VALACYCLOVIR PENCICLOVIR FAMCICLOVIR

A: GANCICLOVIR

slide 17,18 page 5 table 3 31. Which of the following drugs are nucleoside analogues, which inhibit HIV replication by inhibiting DNA polymerase (reverse transcriptase) and, as they become incorporated into the DNA chain, terminate elongation?

ABACAVIR DIDANOSINE EMTRICITABINE STAVUDINE TENOFOVIR ZALCITABINE ZIDOVUDINE LAMIVUDINE

A: Abacavir, didanosine, zidovudine

20 32. Protease inhibitors (amprenavir, atazanavir, indinavir, lopinavir, nelfinavir, ritonavir, and saquinavir) block the cleavage of viral proteins during assembly and maturation and are used in combination ANTI-HIV THERAPY

A: ANTI HIV Therapy

Also cleave VIRAL PROTEINS

22 33. Which of the following drugs appears to inhibit viral RNA polymerase and in combination with interferon is used in the treatment of chronic HCV infection?

A: RIBAVIRIN

6, p.2 34. All of the following statements are correct about the azole antifungal agents (ketoconazole, itraconazole, voriconazole, and fluconazole,) EXCEPT which one?

A: Renal TOXICITY

AZOLES BLOCK ERGOSTEROL SYNTHESIS VIA BLOCKING FUNGUS P-450 ENZYME, 14α-STEROL DEMETHYLASE, ALSO INHIBITS HEPATIC P450 DRUG-DRUG INTERACTIONS, MOST ADVERSE EFFECT IS HEPATOTOXICITY

10 35. Toxic reactions to amphotericin B include

A: All of the Above

"CYTOKINE STORM" - FEVER/CHILLS, HYPOTENSION → NEPHROTOXICITY, HEMATOLOGIC TOXICITY - ANEMIA

10, p3 37. Because of severe systemic toxicity, the use of nystatin is strictly limited to the treatment of superficial infections of the

A: SKIN + ORAL / VAGINAL MUCOSA

11, p.3 38. Which of the following antifungal agents is an inhibitor of DNA synthesis?

A: FLUCYTOSINE

11, p.4 39. Which of the following antifungal agents inhibits the assembly of microtubules and the accessory proteins essential for the formation of the mitotic spindle, and tends to accumulate in the superficial layer of the skin?

A: GRISEOFULVIN