#lecture 1

1. substance that listed in pharmacopeia :

a) Pharmacology
b) Drug in medicine
c) Drug in Pharmacology

Answer : c

2. digoxin source is :

a) Plant
b) Animal
c) Micro organism
d) Human

Answer : a

3. example of mineral sources of drug

a) Insulin
b) Growth hormones
c) Atropine
d) Liquid paraffin

Answer : d

4. orphan drugs are :

These drug for rare disease

5. what Is the branch of pharmacology which improve efficacy and safety :

a) Pharmacotherapy
b) Pharmacogonsy
c) Clinical pharamacology
d) Pharmacoepidiology

Answer : c

6. . what Is the branch of pharmacology which study the natural product for medicnal or heath benesit purposes :

a) Pharmacotherapy
b) Pharmacogonsy
c) Clinical pharamacology
d) Pharmacoepidiology

Answer : b

7. person need to a semi-solid dosage form of drug uses in his hand that was washed it repeatadey , the best semi-solid gives to him is :

a) Cream
b) Ointment
c) Paste
d) Gel

Answer : b

8. you need to give a person semi-solid dosage form to his pigmentations in his hand the best things gives to him is :

a) Cream
b) Ointment
c) Paste
d) Gel

Answer : c

9. the more suger in these liquid form of drugs whichs use in children mainly is :

a) Syrup
b) Suspension
c) Emulsion

Answer : a

10. on of these sentences is not correct about buccal drugs :

a) Can be solid or liquid
b) Quick onest of action
c) Avoid first pass effect
d) Can not use for unconious patients

Answer : d

11. on of these sentences is not correct about inhalational drugs :

a) Can not be solid
b) Used for GI condition
c) Large dose than oral route
d) Higher incidence of action because it can go to the systematic circulation
e) All are false

Answer : e

12. one of these is not correct :

a) Intamuscular and IV injections used for soultions (aqueous and oil)
b) The superficial injections is intademal injection
c) IV injections used just for aqueous solutions
d) All correct

Answer : a

13. lotions is atype of any main rout of administrations :

a) Oral
b) Topical
c) Rectal
d) Transdermal

Answer : b

14. lower patient acceptability , it is the disadvantage of any rout :

a) Oral
b) Topical
c) Rectal
d) Transdermal

Answer : c

15. nicotine , it is example for any rout :

a) Oral
b) Topical
c) Rectal
d) Transdermal

Answer : d

 # lecture 2

1. the ability to predict the chemical structure of drug 3D of it's recertor is :
Rational drug

2. one about rational drug design is not correct

a) Most of drug used drug 3D of it's recertor
b) Only few drug in the past used the random testing
c) All false

Answer : c

3. the dose are used to calculate the dose to be tried in humans is :

a) 0.01 – 0.1 of the minimun lethal dose
b) 1% of the median lethal dose
c) 0.01 – 0.1 of no adverse effect
d) 1-10 of no advers effect

Answer : c

4. in clincal trials , the most number of persons used it is in ------- phase :

a) 1
b) 2
c) 3
d) 0

Answer : c

5. for life threating disease it may permit controlled marketing even before phase ----- completed :

a) 1
b) 2
c) 3
d) 0

Answer : b

6.the main aim for phase 0 is :
To show the best pharmacokinetics

 # lecture 3

1. person do a surgery in thyroid gland : the best purpose of therapy givs to him :
   a) Curative
   b) Supportive
   c) Palliations
   d) Replacement

Answer : d

2.in the offive prescription the main thing in superscription is
   a) Rx
   b) Re-fill
   c) The frequency
   d) Age

Answer : a

3. one of these sentence false :

Trade name used in hospital prescri…. And generic name in office prescri…..

4.when needs :
   a) ac
   b) qd
   c) prn
   d) stat

Answer : c

#lecture 4

1. the mechanism of drug absorption which need energy is/are :
   a) passive diffusion
   b) active diffusion
   c) endocytosis
   d) b+c

Answer : b

2. one of these mechanism can not be saturable:
   a) passive
   b) active
   c) facilitated
   d) b+c

Answer : a

3. effect of PH on drug absorption : the most absorbable
   a) Protonated acid and protonated weak base
   b) Protonated acid and unprotonated base
   c) Unprotonated acid and unprotonated base
   d) Unprotonated acid and protonated base

Answer : b

4. one of these sentence is not correct :

a) If the blood flow increase the absorption increase
b) If the total surface area decrease the absorption increase
c) If the drug move in the GI quickly the absorption increase
d) B+c

Answer : d

5. if the AUC IV is 200 , AUC orally 80 , the bioavailabilty is :

6. what is the best absorption of drug about it's soublility

a) Very hydrophilic
b) Extremely lipophilic
c) Largely lipophilic and has some hydrophilic
d) Largely hydrophilic but has some lipophilic

Answer : c

7. insulin can not give orally due to :

Destroyed by degradative enzyme

#lecture 5

1. one of these is not the main factor that affect the distributions :

a) Blood flow
b) Lipophilicity
c) PH
d) All affect

Answer : c

2. the best distributions in :

a) Liver
b) Brain
c) Heart
d) Stomach

Answer : a

3. one of these can not penetrate in CNS :

Charged drug

4.the majer binding protein and act as a drug reservoir is :

Albumin

5. you have 10 mg of drug , show that there is 3 mg in the extravascular tissue , the Vd Is :

C_0 = intaravascular amount = 10-3 = 7 mg ------ Vd = amount / C_0 = 10/7

6. heparin which has Vd = 4L in 70 Kg distrubate to :

a) Plasma
b) Extracelluar fluid
c) Total body water

Answer : a

#lecture 6

1. the main thing that used to measure the clearance is :
   a) Half-life
   b) Vd
   c) All
   d) No one

Answer : a

2. one of these sentence about first – order kinetics is **false** :
   a) The [C] is much less than Km
   b) Constant amount of drug metabolized per unit of time
   c) The metab;oic of drug is catalyzed by enzyme
   d) All is correct

Answer : b (constant fraction)

3. one of these is not example about zero – order kinetics :
   a) Aspirin
   b) Ethanol
   c) Phenytoin
   d) All correct

Answer : d

4. CYP3A4 , in this the subfamily is :
   a) CYP
   b) 3
   c) A
   d) 4

Answer : c

5. which of these drug is prodrug and need CYP2C19 to activate it :
   a) Codeine
   b) Aspirin
   c) Clopidogrel
   d) No one

Answer : c (note for codeine -------- CYP2D6)

6. if there is **decrease** in drug metabolism one is correct :
   a) Increased in plasma drug concentrations
   b) Increase the drug activity if the metabolite is inactive
   c) Icreased drug activity if the metabolite is active

d) Increase therapeutic drug effect

Answer : c

7. can not competitions
(**omeprazole and warfarin**)

8. in example of phase 1 not involving P450 system : esterases , the example of esterase is:
a) Oxidations of histamine (false Ex for : amine oxidations)
b) Ethanol oxidations (false it's Ex for : alcohol dehydrogenation)
c) Procaine (false it's for : hydrolysis)
d) Aspirin in the liver (true it's example for esterase

9. GER is about ____ ml/min
a) 125
b) 150
c) 25
d) 15

Answer : a

10. ion trapping :
(with weak acids give bicarbonate)

11.Isoflurane eliminate by :
a) Kidney
b) Liver
c) Lungs
d) Sweat

Answer : c

12. the half-life of adrug decreased by all of these except :
a) Increased hepatic blood flow
b) Decreased protein binding
c) Increased metabolism
d) All correct

Answer : d

#lecture 7 :

1. the steady state happem
(**when the rout of elimination is equal to administration)**

2. the drug reaches to the steady state _____ half-life :
a) 2-3
b) 4-5
c) 3-4

d) 5-6

Answer : b

3. 90% of the steady state value is achieved in ___ half-life :

a) 3.3
b) 4-5
c) 2
d) 5-6

Answer : a

4.loading dose is given by : (Va × steady state concentration) / F , F is :
(bioavailability) (note in IV the F=100%)

#lecture 8 :

1. in G protein coupled receptors it's take last several :

a) Miilisecond
b) Second-min
c) Min-hours
d) Hours-days

Answer : b

2.one of these sentence is fales :

a) Gs activate adenylyl cyclase
b) Phospholipase C , produce the second messsnger cAMP .
c) IP3 regulate the Ca concentrations
d) All correct

Answer : b

3.one of these sentence about intracellular receptors Is false :

a) Intracellular receptors mainly located in the nucleus
b) Causes transcripition of DNA
c) The liginad must be hydrophilic
d) It's take about min to hours
e) C + d

Answer : e

4. one about the spare receptors is not correct :

a) Gives maximal response
b) Human heart has more spare receptors than insulins receptors
c) Signal amplifications ……..

Answer : b

#lecture 9 :

1. you have 2 drug (drug A , drug B) the therapeutic dose are (4 to 32 mg in drug A and 75 to 300 mg in drug B) CHOOSE THE BEST ANSWER :

a) A more potent than B
b) B more potent then A
c) The drugs have the same potency
d) The two drugs have the same efficacy

Answer : a

2. the Kd mainly used to determine :
a) Efficacy
b) Affinity
c) Potency
d) Receptors

Answer : b

3. all full agonist has the same :
(Emax , note : Emax in partial agonist less than full)

4. one about inverse agonist is not correct :
a) Can convert R TO R* just
b) This increase the number of receptors
c) Has intrinsic activity between 0-1
d) All false

Answer : d

5.competitive antagonist :
(increased in EC50 no effect in Emax) (can overcome by adding more agonist)

6. irreversible antagonist :
(no effect in EC50 but decreased in Emax) and (can not overcome by adding more agonist)

7. warfarin **(low therapeutic index so more toxic but penicillin opposite**)

#lecture 10 :

1.somatic in **voluntary , locomotions**

2. autonomic : **invouluntary smoot muscles**

3. The cell body of postganglionic neuron :
(nonmyelinated and terminate in organs)

4. in a sympathetic neurons one is not correct :
a) The preganglionic is shorter than postganglionic
b) The preganglionic neurons are highly branched
c) The postganglionic come from (T1-L2)
d) The adrenal medulla is like sympathetic ganglia

Answer : d

5.one of these is not a preganglionic neurons in parasympathetic :

a) Nerve 3
b) Nerve 7
c) Nerve 8
d) Sacral region (S2-S4)

Answer : c

6. the main preganglionic parasympathetic fiber is :
(vagus nerve)

7. one of these is not correct about enteric neurons

a) Mainly located in GI , pancreas and gallbladder
b) It's dependent to the CNS
c) Controlled the exocrine and endocrine secreation
d) All correct

Answer : b

8. one of these is not effect of sympathetic stimulations :

a) Increase blood pressure
b) Increase heart rate
c) Dilation of the pupils and the bronchioles
d) Decrease in blood flow

Answer : d

9.the sympathetic **(complete system) while the parasympathetic is not**

10. reflex arcs (**afferent impulses) are involuntarily**

11. the organ that receive just sympathetic innervation :
(adrenal medulla , kidney , sweat gland , pilomotor muscle)

12. one of these is not correct about somatic nervous sys :

a) Voluntary
b) There is no ganglia in it
c) ANS is faster than somatic
d) All correct

Answer : c

13. epinephrine bind in (**postganglionic nerve to effector organs**)

14. acetylcholine bind to all except :
(adrenergic rec)

15. iontropic receptors :
(affecting ion permeability , ex: nicotinic rece)

16. metabotropic rec :
(coupled to second messenger , G protein , ex : muscarinic and adrenergic rec)

#lecture 11

1. the drug that inhibit transported chokine from extracellular into the cytoplasm ?
(**hemicholinium**)

2.ACh stored into vesicles by active transporte :
(efflux proton)

3. botulinum toxin is :
   a) Toxin inhibit the release of ACh
   b) Toxin inhibit the storge of ACh
   c) Toxin inhibit the synthesis of ACh
   d) Toxin inhibit the binding of ACh into the post recepoter

Answer : a

4. choose the correct statement :
   a) Only Acetylcholinesterase cleaves ACh to choline and acetate
   b) Both Acetylcholinesterase and butyrycholinesterase cleaves ACh to choline and acetate
   c) Only butyrycholinesterase cleaves ACh to choline and acetate
   d) Choline acetyltransferase used to cleaves ACh to choline and acetate

Answer : a

5. M1 **: gastric parietal cells**
6. M2 : **cardic and smooth muscles**
7.M3 : **the bladder and exocraine gland , smooth muscles**
8. M1 and M3 ---- **activate Gq that activate phospholipase C ---- produce IP3 (increase Ca^{+2}) and DAG (protein kinase C)**
9. M2 **------ Gi --- inhibit adenylyl cyclase and increase K^{+}**

10. M1 agonist --- **alzheimer's disease**
11. M3 antagonist ---- - **COPD**

12. choose the false statement :
   a) Nicotine and muscarine at low concentration activate the recepoters while at high concentration block it
   b) muscarine at low concentration activate the recepoters while at high concentration block it
   c) drug with nicotinic action in high concentration show muscarinic action
   d) All false

Answer : d

13. ACh decrease heart rate by : choose the best answer
   a) Making vasodilation
   b) Mimic the vagal stimulation
   c) Release of NO
   d) Increase the salivary secretion
   e) All correct

Answer : b

14. choose the correct statement
(ACh (1% solutions used during ophthalmic surgery)

4

15. the effect of bethanechol(note muscarinic than nictonic) to produce urination is :
   a) Stimulate the detrusor muscle , but relax both trigone and sphincter
   b) Relax the detrusor muscle , but stimulate both trigone and sphincter
   c) Stimulate the detrusor and trigone muscle , but relax sphincter
   d) Relax all the detrusor and trigone and sphincter

Answer : a

16. the therapeutic use of bethanechol is / are :
   a) Atonic bladder
   b) Neurogenic atony
   c) Megacolon
   d) All

Answer : d

17. carbachol **(has both muscarinic and nicotinic and can release the epinephrine) '**

18. pilocarpine :
   - Muscarinic
   - Rapid miosis
   - Xerostomia
   - Sjogren syndrome
   - **Emergency lowering of intraocular pressure (important)**
   - **Open – angle and angle -closure glaucoma**
   - All last drug make miosis (and can block by atropine)

#lecture 12 :

1. the drug use for differentiating cholinergic and mythemic crises :
   a) Physostigmine
   b) Neostigmine
   c) Edrophonium
   d) Echothiophate

Answer : c

2. paralysis of skeletal muscle is the main adverse effect for :
(Physostigmine)

3. the drug used to treatment overdose of atropine is :
   a) Physostigmine
   b) Rivastigmine
   c) Edrophonium
   d) Echothiophate

Answer : a

4. used in the **chronic** management of myasthenia gravis :
(pyridostigimine and ambenonium)

5. used to alzheimer's disease : (important)
- tacrine (has been replaced due to hepatotoxicity)
- donepezil , rivastigmine , galantamine)

6. the main use to Echothiophate is :
(a topical ophthalmic solution for treatment of open angle glaucoma)

7. reactivation of acetylcholinesterase : (important)
- pralidoxime (**but not able to penetrate CNS useful mainly in treat the CNS effect of organophosphate , can not used in overdose of reversible AChE inhibition like (physostigmine)**
- atropine
- diazepam

8. atropine : (important)
- half-life 4 hours
- in eye : (mydriasis , cycloplegia)
- **not** use in patient **with angle -closure glaucoma**
- antispasmodic drug (atropine and scopolamine) reduce GI motility
- reduce GI motility **but HCl not affect so is not effective to treat peptic ulcer**
- at low dose : decrease HR , but at high dose : increase HR
- less secretion so make (xerostomia) and **use in block secretion in upper and lower respiratory tract prior to surgery**
- antidote : organophosphate , overdose of anticholinestrase , **mushroom poising**
- can pass CNS
- **dangerous in children because less secretion and rapid increase in body Temperature**

lecture 13 :

1. the drug used to prevent motion sickness is :
   a) ipratropium
   b) scopolamine
   c) atropine

d) cyclopentolate

Answer : b

2. scopolamine at high dose can produce :
(excitement and euphoria)

3. one of these statement not correct :
(scopolamine has weak action on the CNS)

4. the antimuscarinic used to treat COPD is :

a) ipratropium
b) scopolamine
c) atropine
d) cyclopentolate

Answer : a (as well as tiotropium) and these drug don't pass CNS just in the lung

5. drug used to treat cycloplegia and mydriasis for short action less than one day :

a) ipratropium
b) scopolamine
c) atropine
d) cyclopentolate

Answer : d (as well as tropicamide 6 hours , cyclopen.. 24 hours)

6. drug used to treat parkinson's diseases are : very important
(benztropine and trihexyphenidyl)

7. over active bladder :
(darifencin , fesoterodine and many more ……)

8. nicotine : increase BP and cardiac R .

9. note : sympathomimetics: activate adrenergic rec while sympatholytic : block (تعريفات)

10. tyrosine (tyrosine kinase) ------ DOPA (decaboxlase) ------- dopamine
11. dopamine : transport to vesicle then hydrolxylated to norepinephrine (these step can blocked by : reserpine)

12. the drug can block the release of norepinephrine is : guanethidine

13.. removal of norepinephrine :

- go to the systemic circulation
- Metabolized to inactive by COMT
- Reuptake : by Na – Cl)

14. a1 cascade second messenger (located in postsynaptic) make vasoconstriction BP increase , while a2 inbition of norepinephrine relase (located in presynaptic for both sympathetic and parasympathetic)

15. a1A mainly located in prostate gland

16 . b1 equal affinity to noreph … and epineph increase the cardiac output , tachycardia ,
17. B2 higher sffinty to epinephrine than norepinephrine VASODILATION , BP decrease
18. B3 lipolysis (bladder)

 # lecture 14

1. catecholamines : **(high potency , rapid inactivation , poor pass CNS *)***
2. epinephrine

Has both a and B effect

- one of these statement is not correct :

(adrenal medulla release 80% norepinephrine)

- low dose (B vasodilation)
- high dose (a vasoconstriction)

in CVS activation :

1. B1 increase the CO and HR
2. B1 in kidney cause renin release (vasoconstrictor)
3. a effect constrict arteriole in the skin
4. B2 dilate the blood vessels in the liver and sekeletal muscles
5. **So systolic pressure increase due to (renal blood flow decreased and renin release) and diastolic pressure decrease (B2 effect)**

- Bronchodilation
- Hyperglycemia :

1. Increase glycoeneolysis and release of glucagon (B2 effect)
2. Decreased release of insulin (a2 EFFECT)
3. **SO in diabetes patient increase in insulin**

- AD : pulmonary edema
- Hyperthyroidism

3. Norepinephrine

Has activity a adrenagic

- Vasoconstriction
- **Systolic and diastolic increase**
- Because no B activity
- Bardycardia
- Main therapeutic use : in shock

4. isoproterenol

- B1 and B2
- Weak in a
- So increase HR and CO (B1)
- Decreased resistance (B2)
- **Increased in systolic (B1) decreased in diastolic (B2)**

5. Dopamine
- a and B
- D1 and D2 (vasodilation) located in renal bed
- D2 also found I presynaptic so affect norepinephrine release
- Dilate renal artery
- Useful in shock
- Increase CO increase resistant
- Diuresis
- Treat hypotension

#lecture 15

1. fenoldopam :
- D1 agonist
- **Used to treat hypertension in hospitalzed patients**
- 10 min

2. dobutamine :
- B1
- **Increase CO , with not increase oxygen demand**
- **Should use to caution atrial fibrillation bc increase AV conduction**

3. oxymetazoline :
- a1and a2
- nasel spray decongestants
- vasoconstriction
- **rebound congestion and dependence**

4. phenylephrine :
- a1 vasoconstrictor
- **increase both systolic and diastolic pressure**
- no effect in the heart
- **used to treat hypotension hospitalized patients**

5. clonidine :
- a2

6. albuterol and terbutaline :
- B2 , bronchodilators

- Acute asthma
- **Terbutaline off label o suppress premature labor**
- **The most AD : tremor**

7. salmeterol and formoterol :
   - **Selective B2 , long action 12 hours**
   - Used with corticosteroid **to treat nocturnal asthma**

8. mirabegron :
   - B3
   - **Overactive bladder**

9. amphetamine and tyramine and cocaine :
(a1 and B , indirect adrengic agonist) rasied BP

10. ephedrine and pseudophedrine :
   - **Mixed action**
   - a and B
   - **less** potent
   - **poor substrate for MAO , COMT**
   - oral , good CNS
   - **treat hypotension**
   - **treat bronchodilation**
   - previously used to prevent asthma attack
   - **AD : tremors**
   - **Hyperactivity**

#lecture 16

1. phenoxybenzamine :
   - Nonselective a
   - Irreversible , 24 hours
   - Prevent vasoconstriction a1
   - Decrease in BP and **reflex tachycardia**
   - a2 increase CO
   - increase the release of norepinephrine stimulate B1 so increase the CO
   - **reverse epinephrine stimulate B2 so vasodilation so the decrease to BP is not related to phenoxybenzamine but due to epinephrine (important**)
   - **norepinephrine not revesed , no effect of isoproterenol**
   - **used to : pheochromocytoma hypertensive crisis, Raynaud disease , frostbite**
   - AD : hypotension , **inhibit ejaculation** , reflex tachycardia

2. phentolamine :
   - Reversable ; 4 hours
   - Hypotension , revese epinephrine , reflex tachycardia

- **Contraindicated to patients with coronary artery disease**
- Used to : pheochromocytoma hypertensive crisis, **locally : to dermal necrosis**

3. prazosin , terazosin , doxazosin , tamsulosin and alfuzosin
   - Compitive a1 selective
   - **Treatment of hypertension**
   - **Important note : tamsulosin and alfuzosin used to treat bengin prostatic hyperplasia , due to selective a1B located in bladder and prostate**
   - Doxazosin : in feces
   - **Minimal change in CO unlike . phenoxybenzamine**
   - First dose : **orthostatic hypotensive (reduced by adjustment**)
   - AD : : orthostatic hypotensive , SEXUAL dysfunction , **floppy iris syndrome**

4. yohimbine
   - a2 blocker
   - **sexual stimulant so treat erectile dysfunction**

5. propranolol :
   - non selective B blockers
   - decrease CO , bradycardia , **used to treat supraventricular arrhythmias but not used to treat ventricular arrhthmias**
   - make vasoconstriction
   - decrease BP both systolic or diastolic pressure
   - **bronchoconstriction : so no for asthma or COPD**
   - decrease both glycogenolysis and glucagon
   - **so in diabetic patient insulin may make hypoglycemia**
   - used to treat :
   - hypertension
   - **Angina ; decrease the O requirement , management of stable angina**
   - **MI : by blocking the action of circulating catecholamine so there is no increase in O DEMAND**
   - Migraine (lipophilic)
   - Hyperthyroidism
   - Make sexual impairment

#lecture 17 :

1. nadolol and timolol :
   - Nonselective B
   - **Timolol used to treat chronic open angle glaucoma (12-24 hours)**
   - Both used to treat hypertension
   - **Treat glaucoma by : decrease intraocular humor , unlike cholinergic agent which increase the out flow**

2. aceutolol , atenolol , betaxolol , bisoprolol , esmolol , metoprolol and nebivolol :
- Selective B1 blocker
- Lower BP in paitent with asthma due to not bronchoconstriction (B2)
- **First line to treat chronic stable angina**
- **Esmolol : short half-life gives IV during surgery or diagnostic procedures**
- **Nebivolol : release NO , vasodilation**

3. acebutolol (selective B1) and pindolol (nt selective)
- Antagonist with partial agonist
- ISA
- **Minimize the disturbance of lipid**
- **Do not decrease HDL**
- ISA not used to treat stable angina

4. labetalol and carvedilol :
- a and B blocker
- **decrease lipid peroxidation benift in HF**
- labetalol : used to treat pregnancy induced hypertension (important) and IV to emergencies hypertension)
- **carvedilol , metoprolol and bisoprolol used to treat chronic HF**
- AD : orthostatic hypotension

5. reserpine :
- Block Mg ….. prvent storage
- So decreases release of norepinephrine
- Mangment of hypertension

 # LECTURE 18 + 19

1. definition of ADR :

(any response to drug which is noxious , unintended , occurs at doses ….)

#lecture 20 :

1. one of these is not the action of histamine :
   a) Smooth muscles contractions
   b) Vasodilation causing the vascular endothelim to release NO
   c) Secretion of proinflammatory cytokines
   d) Decrease acid secretions via activations H2 receptors

Answer : d

2. one of these anti-histamine is not used to treat motion sickness :
   a) Clemastine
   b) Cyclizine
   c) Meclizine
   d) Diphenhydramine

Answer : a

3. all of these drugs second – generation show the least sedations **except** :
   a) Desloratadine
   b) Fexofenadine
   c) Levocertirizine
   d) Loratadine

Answer : c

4. the anti-histamine show effect in the cholinergic receptors which drugs :
   a) Cyproheptadine
   b) Diphenhydramine
   c) Promethazine
   d) B + c

Answer : d

5. anti-histamine show has effect in mast cell and block the receptors :
(ketotifen and azelastine)

6. the drug choise to treat the **systemic anaphylaxis** is :
(epinephrine)

7. the useful drug used to treatment of vertigo is :
   a) Meclizine
   b) Scopolamine
   c) Cyclizine
   d) Dimenhydrinate

Answer : a

8. all of these drug the half-life of plasma is 4-6 hours except :
(meclizine and second generations)

9. ophthalmic drugs anti-histamine
(**azelastine , olopatadine , ketoifen , alcaftadine , bepotastine , emedastine)**

10. sumatriptan :
(acute attack of migraine) and it's contraindicated of CVD disease

11. the useful frug effective anxiolytic agent :
(buspirone)

12. prophylactic agent for migrainous headaches :
(**methysergide) it's adverse effect (psychic disturbance)**

13. problem in ductus arteriosus drug use to treat it :
(alprostadil)

14. used to treart constipations :
(lubiprostone)

15.labor inductions (increase the uterine contractions)
(**misoprostol**)

16.used to treat open angle glaucoma
(F2a analogs anything …..prost except iloprost)

17. used to treat eyelash hypotrichosis :
(bimatoprost)

18. pulmonary arterial hypertension :
(PGI2 analogs)

#lecture 21 :

1. the only drug bind to COX irreversible is :
(**aspirin**)

2. note : **all NSAIDs are equally effective**
3. ketorolac : used for **severe pain** (important)

4. one of these is false :
(NSAIDs lower normal body temp) not correct no effect in normal body temp
5. The good combinations to treat pain caused by malignancy
(opioid and NSAIDs)

6. Note 325 mg of aspirin tablet 4-5 days used to : **analgesia**
7. 325 mg mg of aspirin tablet 12-20 days used to : **analgesia and anti-inflammatory**

8. used to treat fever :
(ibuprofen and aspirin and naproxen)

9. very important note : aspirin should be avoided patients less than 20 years because **: Reye syndrome**

10. salicylate cross BBB except :
(**diflunisal**)

11. anti-inflammatory aspirin (more than 4 g/day) then zero-kinteic order began

12. at low dose aspirin decrease uric acid , while at high dose may unchanged or increase so aspirin **is avoided in gout taking probenecid**

13. adverse effect of NSAIDs :

1. GI :
   - Increase acid secretions so may cause bledding or ulcer due to COX-1
   - Decrease this effect use COX-2 selectivtey
   - Should taken with food
   - You can take it by proton pump inhibiters or misprostol

2. increase the risk of bleeding :
   - Aspirin inhibit COX-1 inhibit TXA2 which not make platelet aggregations
   - So aspirin shoulf not given at least 1 week prior to surgery (the half-life of platelet

3. kidney : edema

4. cardiac effect :
   - COX2 increase the risk by inhbit PGI2
   - All NASIDs risk to MI and stroke except aspirin

5. others
   - Not affect to LEUKOTRIENE so at risk **in asthma**
   - 15% hypersensitivity

14. 10 g of aspirin ….. death of children

15. NSAIDs can used during pregnancy :
(acetaminophen) important

16. celecoxib : selective COX-2 , metabolized in the liver

17. acetaminophen :
   - Not NSAIDs , so not make bleeding or ulcer
   - In the CNS
   - **No affect anti-inflammatory**
   - **Uses in children with viral infection or chickenpox (due to reye syndrome with aspirin**)
   - ADF: liver necrosis

#lecture 22

1. empiric therapy :
(gives adrug before prior to bacterial identification and susceptibility testing)

2. broad – spectrum therapy may be indicated when :
(the organism is unknown or polymicrobial infection)

3. MIC :

(is the lowest concentration that inhibit bacterial growth computer automation)

4. MBC :
(the lowest concentration of anti-biotic need to kill 99.9% of bacteria

5. bacteriostatic : (viable organism remain , the number of bacteria not change)
6. bactericidal : (decrease in number of bacteria)
7. linezolid :
- S.aures and enterococci (**bacteriostatic**)
- S.pneumoniae (. **bactericidal**)

8. young children should not treat with quinolones and tetracycline :
(because affect the bone growth and joints)

9. drug treat MRSA : very important
(vancomycin , daptomycin(the more effective) , clindamycin , linezolid)

10. concentration – dependent killing :
- Aminoglycosides , daptomycin
- 4-64 fold of MIC

#lecture 23
1. penicillin are :
   a) Bacteriostatic and concentration dependent
   b) Bactericidal and concentration dependent
   c) Bactericidal and time dependent
   d) Bacteriostatic and time dependent

Answer : c
2. penicillin remains the drug choise to treat :
(gas gargrene , syphilis)

3. the drug choice to treat listria monocytogenes and entercoccal) is :
   a) Ampicillin
   b) Amoxicillin
   c) Oxacillin
   d) A+b

Answer : a

4. prophylactically by dentist :
(amoxicillin only)

5. one of these drugs has the activity against P.aerugionsa :
   a) Amoxicillin
   b) Oxacillin
   c) Nafacillin

d) Ticarcillin

Answer : d

6. example of bacteria that decreased the permeability to the druge bu efflux pump Is :
(klebsiella pneumoniae) note altered PBPs ex : MRSA

7. one of these is not correct :
(penicillin should by taken in full stomach) no the true in empty stomach

8.the two drug that do not reguire dose adjustment for renal insufficiency are :
(nafcillin , oxacillin)

9. note pseudomembranous colitis from C. difficile may happen due to penicillin use

10. the drug that make nephritis is :

a) Amoxicillin
b) Nafcillin
c) Pencillin G
d) Methicillin

Answer : d

11. note : epileptic patients whose use penicillin are at rish to : neurotoxicity (GABAergic inhibition)

12 . four drug decrease the coagulations are :
(piperaciliin , ticarcillin , nafcillin and in some extent penicillin G)

#lecture 24

1. the only cephalosporins available with activity against gram negative anaerobic bactria : **(second generation : cefotetan and cefoxitin**)

2. the agent choice to treat neonatal meningits is/are : '
(ceftriaxone , cefotaxime)

3. against P. aeruginosa in cephalosporins are :
(mainly ceftazidime , cefepime (this in laboratory testing) , ceftaroline)

4. the only available B-lactam in the USA against MRSA is : (important)
(ceftaroline) and it has ESBL

5. cephalosporins used prophylaxis dose prior to surgery because its half-life 1.8 hours : **(cefazolin) and orthopedic surgery**

6. if the patient has renal insufficiency and need to give him cephalosporins the best one is : **(ceftriaxone**)

7. imipenem used with **(cilastatin)**

8. one from carbapenems lacks activity against P.aeruginosa :
   a) Imipenem
   b) Doripenem
   c) Meropenem
   d) Ertapenem

Answer : d

9. the drug has therapeutic level in bacterial meningitis without inflammations is (important) : **meropenem**

10. eosinophilia and neutropenia advers effect to :
(carbapenem)

11. it may cause phlebitis , skin rash is :
(**aztreonam)**

B-lactamase inhibitor :

12. vancomycin :
(MRSA , MRSE , prothetic heart valves) very important , time dependent
Oral to C0 difficle

13. daptomycin :
- Bactericidal and concentration dependent
- MRSA and VRE
- Should not used to treat pneumonia

14. telavancin :
- Bactericidal and concentration dependent
- MRSA
- Last choice to treat pneumonia

15. Fosfomycin :
- Urinary infection

16. polymyxins :
- Has activity P.seruginosa

#LECTURE 25 ;

1. tetracyclines : (bind reversibly to 30 S , bacteriostatic)
2. doxycycline : (used of treatment of acne and chlamydia infection)
3.tetracycline antibacterial spectrum :
- **Lyme disease**
- **Cholera**

- **Chlamidya**
- **Rocky mountain disease**
- **Mycoplasma pneumonia**

4. all tetracycline ; absorbed orally (**except doxycycline and minocycline oral , IV**)

5**. CSF : doxycycline and minocycline**

6. minocycline : pass in high level to saliva and tears so used to treat meningococcal carrier state (important)m

7. doxycycline: bile into feces , minocycline hepatic then kidney

8. one of these statement false about tetracycline adverse effect :

a) Esophagitis can be minimized through coadministration with dairy product
b) Tetracycline should be taken on an empty stomach
c) Tetracycline may cause discoloration on teeth
d) Doxycycline may cause vestiblular dysfunction

Answer : a (NOTE ; any food other than dairy product because it's decrease absorption)

9. one of these drug mainly it's adverse effect phototoxicity :

a) Minocycline
b) Tigecycline
c) Demeclocycline
d) All correct

Answer :d

10. vestibular dysfunction : minocycline and doxycycline mainly

11. tigecycline :

- Reversible to 30S
- **Skin and soft tissue infection**
- **MRSA , VRE , multidrug resistant**
- **Not active : proteus and providencia and pseudomonas sp**
- IV
- Fecal elimination
- AD like tetracycline
- **Note : tigecycline decrease the cl of warfian and increase PT , so international normalized ratio should be monitored closely when tigecycline used with warifan**

12. aminoglycosides :

- TANGS (tobramycin , amikacin , neomycin , gentamicin , streptomycin)
- 30S , bactericidal , concentration dependent , PAE , once daily
- **Cmax (8-10) times the MIC**

- **P.aerungionsa , K. pneumoniae**
- Amikacin ; **less vulnerable** to enzyme resistance
- **All take parenterally : except neomycin due to nephrotoxicity : topically to skin infection or orall to bowel prior to colorectal surgery**
- AD :
- **Ototoxicity : irreversible**
- Nephrotoxicity due to Ca , irreversible
- Neuromuscular paralysis
- **Allergic reaction (neomycin)**

13. macrolides and ketolides :
- **Erythromycin : allergy to pencillin**
- Telithromycin : ketolides (marcolides resistant)
- Irreversible 50S
- **Used to urethritis : azithromycin (and im M. avium)**

Erthomycin :
- 1. Destroyed by gastric acid so no oral
- **2. One of Few drug diffuse into prostatic fluid**
- 3. Metabolized

The longest half-life : azithromycin

AD:
- GASTRIC DISTRESS
- **Cholestatic jaundice**
- Ototoxicity
- Drug interaction(digoxin)

Chloramphenicol :
AD:
- **Anemia : hemolytic and aplastic**
- **Gray baby syndrome**

 # lecture27
1. drug for nematodes :
A . mebendzole :
- Irreversibly blocking **glucose uptake**
- Affected parasites expelled in the feces
- No for pregnant women

B. pyrantel pamoate :
- Not absorbed orally
- Cause release of **acetylcholine and inhibition of cholinesterase leading** to paralysis of the worm

C. ivermectin :

- **Glutamate – gated chloride channel**
- Chloride influx
- Oral
- **Mazzotti reaction**
- Anti-histamine gives to ameliorate the symptoms

D. diethylcarbamazine
- Choice **for filariasis**
- Orally
- **AD: mazzotti reaction , blindness**

All these drug avoid in pregnancy

Very important
- **Onchocerciasis and strongyloidiasis : ivermectin**
- **Trichuriasis : mebndazole**
- **Enterobiasis , hookworm , ascariasis : (pyrantel pamoate and mebendzole)**
- **Filarisis : diethylcarbamazine and albendazole**
- **Trichinosis : albendazole and mebndazole**

Drug to treat trematode :

Praziquantel :
- Used to treat : **paragonimiasis , schistosomiasis , clonorchiasis**
- Ca increase , paralysis
- Take with food
- Distribute into CSF
- No to treat cysticercosis ----- irreversible damage

Drug to treat cestodes :
A. NICLOSAMIDE
- Inhibit of phosphorylation of ADP
- **A laxative give prior it**
- Good CSF

B. aalbendazole :
- Glucose uptake in nematode
- Treat : **cysticercosis , hydatid disease**
- Good CSF

Very important :
- **Echinococcosis : albendazole**
- **Cysticercosis : Praziquantel , albendazole**
- **Taeniasis , taenlasis : Praziquantel**

- **Diphyllobothriasis : Praziquantel and NICLOSAMIDE**

Amebiasis :
Mixed amebicides :
Metronidazole :

- Amebiasis and pseudomembranous colitis
- **Nitro group bind to electron acceptors , no bind to protein or DNA , death**
- Combination with luminal amebicide (90 % effect)
- Yes CSF
- **Metabolisim : 1- hepatic oxidation then 2- glucuronidation**
- **AD: metallic taste**

Luminal amebicide :
A. iodoquinol :

- Amebicial , trophozoite and cyst

B. paromomycin :

- Amebicidal

Systemic amebicides :
A. chloroquine :

- Combination with metronidazole to treat liver abscess
- Not effective for luminal
- **Effective to malaria**

B. dehydroemetine :

- Inhibit protein synthesis
- IM

#lecture 28
1. amphotericin B :

- Bind to ergosterol and make a pore
- Must be coformlated with sodium deoxycholate or lipid to form liposome to least the renal toxicity
- Adjustment not require with hepatic dysfunction but need in renal dysfunction
- Low therapeutic index
- Adverse effect : anemia , hypotension , chills , kidney failure

2. 5-FC :

- Combination with amphotericin B to treat (meningitits , C.neoforman,albicans)
- Inhibit the thymidylate synthase
- Fungistatic
- Oral and penetrate CSF
- AF ; depression in the bone marrow

3. imidazole : **topical for cutaneous infection**

4. azole :
- Fungistatic
- Inhibit the ergosterol synthesis

5. fluconazole :
- Prophylaxis in recipients of bone marrow transplants
- C.neoformans
- Mucocutaneous candidiasis
- Single dose
- AF : hepatotoxicity

6. itraconazole :
- Capsule : should take with food , solution should take in empty stomach
- Extensively metablized in the liver
- AF: edema , hypokalemia
- Has a negative inotropic effect : avoid VD such as : heart failure

7. posaconazole :
- Oral suspension , tablet , IV
- Treatment : invasive candida and aspergillus infection
- Low bioavailability and should taken with food

8. voriconazole :
- Invasive aspergillus
- High oral bioavaibiltiy
- Elemnate by CYP450

9. all azole penetrate CSF except : (**itraconazole**)

10. all azole eliminate by hepatic CYP 450 except: (**fluconazole**)

11 only ------ does not require loading dose (**micafungin**)

12. caspofungin :
- First line to invasive candida
- Second line to aspergillous after (amphotericin B and azole)
- Adjustment : not require in renal but require in hepatic (opposite to amphotericin B)
- Substrate to CYP 450

13. micafungin and anidulafungin :
- Prophylaxis in invasive candida infection in patient who undergoing hematopietic stem cell transplantation (micafungin)
- Don't adjust in renal and mild to modrate hepatic dysfunction

- Adjust in severe
- These agent not subrate to CYP450

#lecture 29 :
For RS infection

1. neuraminidase inhibitors :
   - Zanamivir and oseltamivir
   - Influenza type A , B
   - Inhibit life cycle of virus
   - Oseltamivir oral , but zanamivir inhalation
   - Should be given with caution in asthma

2. adamantane antiviral :
   - Amantadine and rimantadine
   - Limited to influenza A
   - Action on M2 protien in virus
   - Amantadine cross CNS , but rimantadine does not at the same extent
   - AF: CNS effect

3. ribavirin :
   - Inhibit the replication of RNA and DNA
   - RSV
   - Chronic hepatitis C with interferon-a
   - An aersosl used to treat RSV infection
   - AF: anemia , elevated bilirubin

For herpes virus :
1. Acyclovir :
   - HSV 1 , 2 , VZV , EBV
   - Treatment of HSV encephalitis
   - Genital herpes infection (important)
   - Prophylactically : (pre bone marrow transplant and post heart transplant)
   - Action : thymidine kinase
   - In high dose ----- renal dysfunction

2. cidofovir :
   - CMV ,,,, AIDS
   - Inhibit DNA synthese
   - IV
   - Intravitreal injection (injection into the vitreous humor between the lens and retina of cidofovir associated with risk of hypotony and uvetitis)
   - Neutropenia

3. foscarnet :

- CMV , acyclovir resistant HSV
- Inhibit DNA , RNA
- AF : anemia , nephrotoxicity , hypo-calcemia , magnesemia , kalemia , hyperphosphatemia

4. ganciclovir :
   - CMV
   - Inhibit DNA
   - Valacyclovir and valganciclovir have high bioavailability
   - Neutropenia
   - Carcinogenic
   - Embryotoxic and teratogenic

#lecture 30

1. coma cocktail consists of : IV ?
   - **Dextrose to treat hypoglycemia**
   - **Naloxone to treat opioid or clonidine toxicity**
   - **Thiamine for ethanol induced Wernicke encephalopathy**

2. methanol :
   - Found in washer fluid and airplane fuel
   - Oxized to formic acid
   - By alcohol dehydrogenase
   - **Make metabolic acidosis**

3. ethylene glycol
   - Found in antifreeze radiator
   - Oxidized to glycolic and glyoxylic and oxalic acids
   - By alcohol dehydrogenase
   - **Make metabolic acidosis**

4. one of these statement not correct about isopropanol :
   a) Is metabolized to acetone
   b) Cetone then oxidized to carboxllic acid so acidemia may occur
   c) Is known CNS depressant
   d) There is no antidote to treat isopropyl alcohol ingestion

Answer : B

5. CO :
   - Bound CO increase Hg affinity to O
   - **Produce cherry red skin**
   - **Methylene chloride metoblized in the liver to CO**

6. cyanide
   - Inhibit metalloenzyme (cytochrome a3)

- **Smoke iinhalation and cyanide toxicity should be avoided to sodium nitrite unless carboxyhemoglobin less han 10%**

7. iron :
   - Toxic as little as 20 mg , lethal 60 mg
   - Hypotension
8. lead :
   - Adult absorbed 10% but children 40%
   - **Half-life 1-2 month in blood but in bone 20-30 years**
   - **Dimercaprol is suspended in peanut oil and should not be given to those with a peanut allergy**

9. **poison and antidote :**
   - **Acetaminophen – NAC**
   - **Anticholinergic and anti-histamine ___ phsostigmine**
   - **Arsenic – succimer and dimercaprol**
   - **Benzodiazepine --- flumazenil**
   - **CO : oxygen**
   - **Cyanide --- hydroxocabalmin , sodium nitrite**
   - **Digitalis --- digoxin -Immune fab**
   - **Hydroflurioc acif ---- calcium**
   - **Iron --- deferoxamine**
   - **Isonlazid and Gyromitra mushrooms ------ pyridoxine**
   - **Methanol and ethylene glycol ----- fomepizole**
   - **Heparin ---- protamine sulfate**
   - **Lead ---- (40-70 mg) oral succimer , high than 70 mg (dimercaprol IM) or calcium disodium (IV)**
   - **Methemoglobinemia ----- methylene blue**
   - **Organophosphate , nerve gas ---------- atropine and pralidoxime**
   - **Oplate , clonidine --------- naloxone**
   - **Warfarin --- V.K1**

Omar albatayha