Important study notes

- ACE-I + alpha blockers = hypotension
- ACE-I + NSAIDs = increase renal impairment
- ACE-I + ARBs = Hyperkalemia
- ACE-I + Anti-diabetics = hypoglycemia

- **Asthma medications classifications:**
  - Symptoms Relievers: Short acting Beta2- agonists
  - Symptoms Preventers: Steroidal and nonsteroidal (Sodium Cromolyn)
  - Symptoms Controller: Theophylline, Ipratropium, Long acting beta2-agonists.

- **Some random drugs' Side effects:**
  - Salbutamol: Tremors, hypokalemia, tachycardia.
  - Allopurinol: hepatotoxicity, hypersensitivity, neuropathy, mylosuppresion (blood disorders such as anemias)
  - Estrogen therapy: Thrompoembolism, MI, breast tenderness, peripheral edema, nausea.
  - Tamoxifen: hot flashes, vaginal bleeding, DVT
  - Nitroglycerin: throbbing pain, flushing, tachycardia, postural-hypotension
  - Verapamil: Constipation, dizziness, fatigue.
  - All anti-epileptics: Ataxia, allergy, mylosuppresion, GI disturbance. **BUT**, *valproate is ALL PLUS hepatotoxicity. Phenytoin ALL PLUS hirsutism, gum hyperplasia, nystagmus.*
  - Cyclosporine: Hyperkalemia, Hyperuricemia, anemia.
  - Epinephrine: Hyperglycemia.

- Alpha $_1$-blockers: postural hypotension
- Alpha2- agonists
  - Methyldopa: sedation, dizziness, hematological disorders.
  - Clonidine: sedation, rebound hypertension.
- Reserpine: sedation, depression
- Vasodilators: reflex tachycardia.

- Amoxicillin >> dental prophylaxis.
- Dicloxacillin, methicillin, naficillin, oxacillin, floxacillin>> AntiStaph.
- Cetazedime>> DOC for pseudomonas.
- Vancomycin>> MRSA
- Tetracyclins>> Lyme disease, Ricketsia, Cholera.
- Macrolides
  - DOC for Mycoplasma, MAC, Legonella.
  - Erythromycin for woman on labor and having penicillin resistance OR allergy.
- Ciprofloxacin>> Typhoid fever.
- Metronidazole >> Pseudomembranous colitis
- Ceftriaxon >> Gonorrhea, nesseria meningitis.
- Diuretics (except acetazolamide), vomiting >> Metabolic Alkalosis
- Panic attack, Hyperventillation (quick breathing) >> Respiratory Alkalosis
- Metformin >> Metabolic acidosis
- Asthma, COPD >> Respiratory Acidosis.
- Morphine
  - Potent, long acting.
  - Cough suppressant (central acting).
  - Anti-diarrheal.

- Side effects:

- **Antiarrhythmics:**
  - Class IA, IC >> Slow phase ZERO depolarization
  - Class IB >> Shorten phase THREE repolarization
  - Class II (beta-blockers) >> Inhibit phase FOUR depolarization
  - Class III (K^+ channel blockers) >> prolong phase THREE repolarization
  - Class IV (Ca^{+2} channel blockers) >> inhibit action potential
- **Epilepsy:**
  - Absence (petit-mal): blank out for few seconds. TTT ethuxomide, lamotrigine.
  - Atonic: head suddenly drops, wear helmet. TTT Valporate.
  - Myoclonic: falling asleep and wake up on jerks. TTT valproate, clonazepam.
  - Tonic-clonic (grand-mal): muscle stiffness, loss of consciousness, blue face. TTT Valporate, carbamazepine, phenytoin.
  - Status epilepticus: seizures for more than 5-10 mins. Needs urgent care. TTT lorazepam or diazepam
  - Febrile: characterized with FEVER. TTT Diazepam
- Hydralazine, Labetolol, α-methyldopa >>> HTN in pregnancy

- **HTN Crisis TTT:**
  - Na Nitroprusside: Has CN (cyanide) in its structure, causes CN toxicity treared by Na Thiosulfate.
  - Fenoldepam: D1 Agonist, used in renal insufficiency, NOT USED IN PATIENT WITH GLUCOMA.
  - Nicardipine.
  - Labetolol

- **Drugs Precipitate Digoxin Toxicity:**
  - Diuretics (except potassium sparing) due to Hypokalemia
  - Quinidine, Verapamil, Amiodaron, due to displacing digoxin from binding site.
  - Corticosteroids due to hypokalemia.
  - Hypothyroidism
  - Renal failure
- N.B: Phenytoin INCREASE digoxin execration.
- **Atidotes:**
  - Tranexamic Acid >> fibrinolytics
  - Organophosphorous >> Atropine, paralidoxime
  - CCB, BBB >> Glucagon, calcium gluconate (for CCB).
  - Chloroquine >> Diazepam
  - BDZs >> Flumazenil
  - Botilinum Toxin >> Choline, physostegmine.
  - Opioids toxicity >> Naloxone

- **Anemias:**
  - Iron deficiency: Hypochromic microcytic anemia. TTT Ferrous sulphate (orally) OR IV iron dextran, sorbitol…etc
  - Folate deficiency: Megaloplastic anemia.
  - Cyanocobalamin (B_{12}) deficiency:
    - Pernicious anemia due to decrease GI absorption >> TTT IM or SC supplement.
    - Macrocytic Megaloblastic anemia: Associated with Folic acid deficiency BUT when Neuropathy occurs>> B_{12} deficiency.

- Thalassemia is a microcytic anemia >> Iron Overload>> Desfuroxamine.
- Sickle Cell anemia treated by hydroxyurea.
    - ❖ Pethidine, morphine for sickle-cell induced neuralgia.

- **Insulins:**
    - Rapid Acting: Lispro, Aspart, Glulisine>> IV, SC.
    - Short Acting: Regular Insulin (soluble insulin)>> IV, SC.
    - Intermediate: NPH>> SC ONLY
    - Long Acting: Glargine (acidic, SC ONLY), Detemir.
- **Oral Anti-Diabetics:**
    - Insulin Secretagogues: Increase Insulin secretion
        - ❖ Sulfonylureas
            - SE: Hyperinsulinemia, weight gain, hypoglycemia.
        - ❖ Glinides.
    - Insulin Sensitizers:
        - ❖ Biguanides (Metformin): Inhibit gluconeogenesis, decrease intestinal absorption.
            - SE: Lactic acidosis, Vit B12 deficiency.
            - C/I: Renal dysfunction, Hepatic dysfunction, Heart Failure.
    - Thiozolidinediones (Glitazones)
        - ❖ SE: Weight gain, heart problems, hepatotoxicity.
    - A-Glucosidase Inhibitors (Acarbos, Miglitol)
        - ❖ SE: Hepatotoxicity, diarrhea.
        - ❖ C/I: IBS.
- **To pass breast milk:**
    - Low acidity of the drug.

- Low molecular weight.
- Hydrophobic (Lipophilic).

- **<u>Lange Ch.1 Weird drugs:</u>**
  - Polycarbophil Calcium (Fiber-Con): used for diarrhea and constipation, used with plenty of water, works in 12-72 hours, CI with tetracyclines.
  - Chlorpropamide: sulfonyle urea causes disulfiram-like reaction.
  - Theophillins (Xanthines) are Phosphodiestrase-Is.
  - Buprenorphone: Mixed agonist-antagonist to treat addiction.
  - Danazel: androgen.
  - Triametrene: K^+ sparing diuretic.
  - Ethacrynic acid: loop diuretic.
  - Chlorthalidone: thiazide-like diuretic.
  - Diazoxide: thiazide-like drug for treating hypoglycemia. Has NO effect as diuretic or on HTN.
  - Torsemide: loop diuretic.
  - Finasteride: antiandrogen for BPH, hair loss in MEN.
- Epstein - Barr virus: Fever, rash. In Teenagers
- Human-papilloma virus (warts): arms, genitals, legs, face. >> Causes cervical cancer.
- Cataplexy: sudden and total muscle tone loss.
- Botulinum toxicity caused by decrease in Ach
- Weak electrolyte: urea.
- Doxorubicin >> Cardiotoxicity.
- Bleomycin >> pulmonary toxicity.
- Cyclophosphamide >> Hemorrhagic cystitis.
- Dinoprostone >> C/I in Pulmonary and cardiac problems.

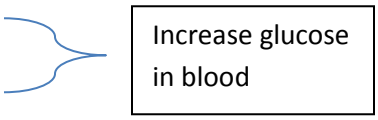
- **Lipid profile:**
  - LDL <100
  - HDL >60
  - Total Cholesterol <200
- Lice: brush, pillow.
- Nits: scalp.
- RNA consist of 4 bases (A, U, C, G) and ribose sugar, with 5’3’hydroxy bond.
- Prostacyclin causes vasodilation.
- Bone TB (Pots disease) tested by Mantux test, treated by Rifampicin (DNA dependent RNA polymerase).
- Melatonin for Jetlag
- Galatamine, Tacrine, Donpezil >> Anticholinesterases.
- Memantine >> NMDA receptor blocker.
- **Pharmaceutics Notes:**
  - Disintegrants:
    - Starch
    - CO2
    - Methylcellulose
  - Binders:
    - Starch
    - Sucrose, lactose.
    - PEG
  - Glidants:
    - Silica.
    - Talc
  - Lubricants:

- ❖ Silica
- ❖ Talc
- ❖ Stearic acid

- Dissecant, hygroscopic:
  - ❖ Silica gel.
- Stability tests for emulsions:
  - ❖ Sedimentation rate
  - ❖ Aggregation (fluculations)
  - ❖ Coalescense.
  - ❖ Phase Inversion
- Determining emulsion type:
  - ❖ Dilution test
  - ❖ Conductivity test :
    - W/O >> No conduction
    - O/W >> Conduction
  - ❖ Dye test.
- Micro-emulsions: heterogenic, clear, and thermodynamically stable.
- Emulsions: heterogenic, thermodynamically unstable.
- **Factors affecting absorptions:**
  - ❖ pH
  - ❖ Blood flow
  - ❖ Surface area
  - ❖ P-glycoprotein
- **Factors affecting distribution:**
  - ❖ Blood flow
  - ❖ Plasma binding
  - ❖ V_d

- **<u>Morning sickness :</u>**
  - Pyridoxin (Vit B_6).
  - Mecilizine
- **Motion sickness:**
  - Scopolamine (Transdermal patch).
  - Cinnirazine.
- Dopaminergic drugs cause sudden attack of sleep.
- cAMP>> Constriction>> Blocked by ACE-I
- ACE-Is decrease afterload, act on arterioles.
- cGMP>> Dilation>> increased by Nitrates
- IBD (Crohn's disease): Irritable bowel disease
  - Sulfasalazine
  - Infliximab
  - Prednisone
- Alteplas dose for stroke is 90mg.
- Sulfasalazine dose for IBD is 8g
- **<u>CCB used for:</u>**
  - HTN
  - Angina
  - MI
  - Arrhythmia (ONLY verapamil and diltiazem).
- **<u>Osteoporosis risk factors:</u>**
  - Smoking
  - Rheumatoid arthritis
  - Low body index
  - Early menopause.
- Carbimazole causes blood disorders such as agranulocytosis.

- Gluconeogenisis: build glucose from non-carbohydrates.
- Glycogenolysis: break down of glycogen.



- **Killed Vaccines:**
  - Hepatitis
  - Rabies
  - Influenza
  - Dipheteria
- **Living Vaccines:**
  - Chicken box
  - Measles
  - Mumps
  - Rubella
  - Oral poliovaccine
  - Dacetylmorphone (Heroin) >> High addiction.
- **Opioid toxicity:**
  - Euphoria
  - Respiratory depression
  - Miosis
  - Constipation
- Phenol: Carbolic acid
- Haemostasis: the stopping of blood flow.
- Hematinic drug: a medicine or vitamin that increases the hemoglobin content of the blood.
- **Clinical Phases:**
  - Phase I: Determine kinetic and dynamic of drug of healthy people.
  - Phase II: Determine efficacy and safety on patients.

- Phase III: pre-marketing evaluating benefits and risk relationships on patients.
- Phase IV: Post marketing.

- Chloroquine:
  - C/I in G6PD
  - Safe in pregnancy and lactation
- Premaquine
  - C/I in G6PD and pregnancy.
  - Safe in lactation.
- Milrinon:
  - PDE3-I (Phosphodiesterase 3-Inhibitor)
  - Vasodilation
  - +ve inotropic
  - Used for CHF
- Aminoglycosides:
  - Ototoxicity: Cisplatin, loop diuretics.
  - Nephrotoxicity: Cisplatin, ciclosporin.
- Heparin, LMW heparin, and warfarin: used in pulmonary embolism.
- Metformin safe in pregnancy and breast feeding.
- TCAs: need hepatic adjustment.
- Antipsychotics: dose adjustment in renal dysfunction.
- **We make prodrug to:**
  - Increase bioavailability if GI absorption is low.
  - Increase selectivity to certain organ or tissue.
  - Decrease side effects.
- Can't overcome POTENCY by making prodrug.
- Promethazine: alkaline increase execration of NH_4Cl.

- Used as antidote in methimazole overdose.

- Immunoglobulins administration routes:
  - IM
  - IV
  - SC
- Antacids raise stomach pH from 1.5 to 3.5
- Otitis media >> local analgesics
- Otitis externa >> Antibiotics
  - If caused by pseudomonas >> neomycin
  - If caused by staphylococcus >> floxacillin
- **<u>Autonomic nervous system:</u>**
  - Sympathetic nervous system (Adrenergic system):
    - Dilates everything (decrease secretions, and contractions) EXCEPT heart and blood vessels.
  - Parasympathetic nervous system (Cholinergic system):
    - Constrict everything (increase secretions and contractions) EXCEPT heart and blood vessels.
    - Direct: Ach, carbacol, pilocarpine.
    - Indirect: physostegmine, neostigmine, organophosphorus.
  - Parasympath**olytics** (Anti-Cholinergics):
    - Decrease contractions and secretions (but in GI secretions less effect).
    - Atropine, hyoscine, ipratropium.
- **<u>Local Anesthesia:</u>**
  - Local: procaine, bupivacaine.
  - Topical: benzocaine.
  - Local + Topical: lidocaine.

- Thiopental >> Ultra-short barbiturate.
- **Migraine:**
    - It's a combination of vasodilation which is the aura phase (acute attack) and vasoconstriction which is the headache phase.
        - ❖ Drugs for ACUTE attacks (Vasodilation):
            - Triptans.
            - Analgesics.
            - Ergots.
        - ❖ Drugs for prophylaxis (Vasoconstriction):
            - Beta Blockers.
            - CCB.
- ALL anti-TB drugs if used as SINGLE drug ALONE will lead to resistance.
    - Rifampicin >> resistance in DNA-Polymerase.
    - INZ >> Mycolic Acid in cell wall
- For anticancer medications to WORK the cell has to be in (G_1, S, G_2, M) phases and NOT in G_0 phase.
- Antifungal has anticancer activity >> 5-flurouracil
- Anti HIV used in hepatitis >> Lamivudine
- Antifungal NOT used in Athletic foot >> Nystatin

- **Calculations:**
    - BSA (Body surface area) = √(Weight in Kg x Height in cm)/3600 كله تحت الجدر التربيعي
    - Child dose based on BSA= BSA x Adult dose/1.72m^2
    - Fried's rule = Age in months x Adult dose/150lb
    - Clark's rule = Weight in lb x Adult dose/150lb

- Young's rule = Age in years x adult dose/ age+12
- MilliEquevilence = (mg x valency)/molecular weight
- Absolute risk reduction (ARR) =%placebo OR conventional - % new
- Number needed to treat (NnT) =100/ARR
- SPF = Time to stay in the sun / time to get burn
- R (infusion rate) = C_{ss} V_d K_{el}
- Cl (Clearance) = V_d K_{el}
- T-half = $0.639/K_{el}$
- 1tsp. = 5ml
- 1 tbsp.= 15ml

Wish you all the best...

إدعولي لي بدعوة من القلب ..

☺

في رعاية الله و أمنه من خالص الأمنيات بالنجاح و التوفيق

ضحى

Doha