Med Ed 101 Pharmacology Acronyms

A Quick Reference Guide for Students and Clinicians

Educational Resource From
Med Ed 101 and Real Life Pharmacology

Purpose of This Guide

This resource provides a concise collection of pharmacology acronyms encountered in clinical practice, pharmacy education, and board exam preparation. Understanding these acronyms can help healthcare professionals and students quickly recognize medication classes, clinical frameworks, and therapeutic concepts used in patient care.

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Real Life Pharmacology

Practical pharmacology insights designed for pharmacists, pharmacy students, and healthcare professionals.

Notice an error? Suggestions? Shoot us an email at mededucation101@gmail.com

Cardiovascular:

★ ACEis – **BRAASH**
- **B**radykinin ↑, → cough (dry) & angioedema
- **R**enal protection (diabetic nephropathy)
  - ↑ *creatinine acceptable ≤ 30%*
- **A**ce inhibition → ↓ angiotensin II → vasodilation
- **A**void in pregnancy
- **S**erum K+ ↑, aldosterone ↓
- **H**FreF → ↓ remodeling & mortality

★ ARBs – **KAREN**
- **K+** ↑, aldosterone ↓
- **A**ngioedema rare, less than ACEi (no cough)
- **R**enal protection (diabetic nephropathy)
  - ↑ *creatinine acceptable ≤ 30%*
- **E**jection fraction ↑ → improved outcomes in HFrEF
- **N**ot for pregnancy

★ CCB DHPs (amlodipine, nifedipine) – **FEETS**
- **F**lushing
- **E**dema (peripheral) – worse with NSAIDs
- **E**ffect mainly in blood vessels, not the heart (vascular selective)
- **T**achycardia (reflex)
- **S**afe in asthma

★ CCB non-DHPs (verapamil, diltiazem) – **CHAASM**
- **C**onstipation (verapamil)
- **H**eart rate ↓ (negative chronotrope)
- **A**V block (worsens heart block)
- **A**fib, SV tachycardia, angina (common indications)
- **S**ystolic HF contraindicated → worsens HFrEF
- **M**ed interactions CYP3A4 (statins, BBs, digoxin)

★ Beta-Blockers – **ABCDE**
- **A**sthma caution (non-selective)
- **B**radycardia
- **C**over post-MI & HF (select agents)
- **D**iabetes masking (hypoglycemia)
- **E**rectile dysfunction

★ Aldosterone antagonists (spironolactone, eplerenone)– **KING**

- **K+** ↑
- **I**mproves mortality (HFrEF)
- **N**ephron collecting duct and distal tubule
- **G**ynecomastia (spironolactone)

★ Alpha-2 agonists (clonidine, methyldopa) – **SAD BRAD**

- **S**edation
- **A**brupt stop → rebound HTN
- **D**ermatitis (transdermal)
- **BR**ADycardia/hypotension

★ Vasodilators (hydralazine, minoxidil) – **FAST-H**

- **F**luid retention/flushing/hypotension
- **A**ngina exacerbating
- **S**ympathetic activation, reflex (↑ HR)
- **T**achycardia/palpitations
- **H**ydralazine → lupus-like symptoms

★ Alpha blockers (tamsulosin, silodosin) – **FLOP-FLOP**

- **F**irst-dose syncope/orthostasis/dizziness
- **L**ibido decreased/ejaculation failure
- **O**bstructed nose (rhinitis)/**O**uch headache
- **P**rostate (BPH) symptoms relief
- **Flop**py iris syndrome risk

★ Statins – **PARA-G**

- **P**ain (myalgias) - muscle aches, soreness, weakness
- **A**LT/AST ↑
- **R**habdomyolysis (rare) - severe muscle pain, dark urine, N/V
- **A**void pregnancy
- **G**rapefruit avoidance - simvastatin, lovastatin, and atorvastatin

★ Fibrates – **GLADS**

- **G**allstones
- **L**ipid ↓ (TG)
- **L**abs - ↑ SCr/renal function decline (esp. fenofibrate)
- **A**LT ↑ (hepatotoxicity)
- **D**rug interaction - ↑ statin myopathy/rhabdomyolysis (gemfibrozil)
- **Skin** - photosensitivity/rash (SJS rare)

★ Anticoagulant – **BLEEDS**

- **B**leeding risk
- **L**abs vary by agent
- **E**lderly caution, bleed risk with frequent falls
- **E**mergency reversal needed (vit K, Kcentra, FFP, pradaxa/andexxa, protamine)
- **D**rug interactions (amiodarone, abx, azoles, NSAIDs/antiplatelets)
- **S**urgery planning, potentially hold agent

  - DOAC – **RAPIDS**
    - **R**enal function matters (dose adjustments)
    - **A**pixaban safer (low bleed risk)
    - **P**-gp/CYP3A4 interactions
    - **I**NR not monitored - no routine labs (major bleed, urgent surgery check Xa level)
    - **D**irect reversal drugs (pradaxa/andexxa)
    - **S**pecific indication dosing (Afib ≠ VTE)

  - LMWH/Heparin – **HIT BLEED**
    - **H**IT risk/thrombocytopenia
    - **I**V or SQ
    - **T**ransition/bridge (used to bridge warfarin)
    - **BLEED** - protamine reversal

  - Warfarin – **WARFIS**
    - **W**atch INR (goal 2-3 typically)
    - **A**void in pregnancy (teratogenic)
    - **R**eversal = Vitamin K + PCC (Kcentra)/ FFP
    - **F**actors II, VII, IX, X inhibited (+ Protein C/S)
    - **I**nteractions - tons (amiodarone, abx, alcohol, rifampin) + vitamin K diet changes
    - **S**low onset → often needs bridging (5-7 days to reach steady state)

★ Antiplatelet – **DAPT**

- **D**ual Antiplatelet therapy (clopidogrel + aspirin) → stent/ACS
- **A**spirin: GI bleed/ulcers, reye syndrome, tinnitus
- **P**2Y12 inhibitors (clopidogrel, prasugrel, ticagrelor)
  - Clopidogrel prodrug activated by CYP2C19
  - Potency: (prasugrel > clopidogrel) - caution age ≥ 75 and weight < 60 kg with prasugrel
  - Avoid aspirin dose >100 mg with ticagrelor
- **T**iming (stop before surgery) → typically 5-7 days prior depending on surgery

★ Thiazide – **CLUE-K**

- **C**alcium ↑ (can help prevent calcium stones/osteoporosis)
- **L**ipids ↑, glucose ↑ (transient metabolic effects)
- **U**ric acid ↑ (gout)
- **E**lectrolytes: ↓ K and ↓ Na
- **K**idney limits (GFR < 30) - reduced efficacy

★ Loop – **LOOPSS**

- **L**oop of Henle (blocks Na-K-2Cl in TAL)
- **O**totoxicity
- **O**ut with electrolytes: ↓ K, ↓ Mg, ↓ Ca
- **P**owerful diuresis (best for edema)
- **S**hrink volume → dehydration/hypotension + metabolic alkalosis
- **S**ulfa allergy (except ethacrynic acid)

★ Nitrate – **NITRATE**

- **N**O (nitric oxide) → cGMP (venodilation > arterial)
- **I**ndication: angina relief
- **T**olerance → need nitrate-free interval (ideally 10+ hours)
- **R**eflex tachycardia
- **A**dverse effects: headache, flushing
- **T**oo low BP (hypotension/orthostasis/dizziness)
- **E**rectile dysfunction med contraindication (PDE-5 - i.e. sildenafil)

★ Inotropes – **BASHER**

- **B**eta 1 agonist (Dobutamine)
- **A**fterload reduction (Milrinone)
- **S**ympathomimetic effects (tachycardia, arrhythmias)
- **H**eart failure/decompensation (main indication)
- **E**lectrolyte monitoring
- **R**enal monitoring

★ Antiarrhythmic – **PRO-QT**

- **P**roarrhythmia (can worsen rhythm/torsades risk)
- **R**ate control = Class II (BB) + Class IV (non-DHP CCBs)
- **O**rgan toxicity (amiodarone: lung/thyroid/liver)
- **Q**T prolongation → torsades (IA + III)
- **T** = Think structural heart disease (avoid class IC)

Class I = Na channel blockers (procainamide, lidocaine, flecainide)

- *IA (moderate QT): procainamide*
- *IB (less QT): lidocaine*
- *IC (widens QRS): flecainide*

Class II = Beta blockers (metoprolol, propranolol)
Class III = K channel blockers (amiodarone, sotalol, dofetilide)
Class IV = Ca channel blockers (verapamil, diltiazem)

Endocrine/Diabetes:

★ Insulin – **BRAIN**
- **B**asal (glargine/determir/degludec) - once daily dosing for most people
- **R**apid = meals (lispro/aspart/glulisine)
- **A**dmin timing matters
  - SA: 15 min prior to meal or immediately after
  - Regular: 20-40 min prior to meal, potential for late post-prandial hypoglycemia
- **I**ntermediate (NPH) peaks → higher nocturnal hypoglycemia risk
- **N**umber 1 adverse effect = hypoglycemia + weight gain

★ Metformin – **MET-FAB**
- **M**OA: ↓ hepatic glucose production
- **E**GFR < 30 = stop
- **T**ummy upset (GI diarrhea/nausea)
- **F**atal lactic acidosis (rare)
- **A**ppetite/weight neutral or ↓
- **B** = B12 deficiency (long-term)

★ Sulfonylureas (glipizide, glyburide, glimepiride) – **HUG-W**
- **H**ypoglycemia (highest for glyburide - long-acting)
- **U**se caution in renal impairment (↑ hypoglycemia risk - esp. glyburide)
- **G**eriatric caution (Beers)
- **W**eight gain common

★ DPP-4 inhibitors – **MILD-GTN**
- **M**odest A1c ↓ (~0.5-0.7%)
- **I**nfections (URI/nasopharyngitis)
- **L**inagliptin = no renal adjustment
- **D**ose adjust in renal disease (except linagliptin)
- **G**lucose-dependent (low hypoglycemia risk)
- **T**argets DPP-4 → ↑ endogenous incretins (↑ GLP-1, ↓ glucagon)
- **N**o weight change

★ GLP-1s – **SLIM-W**
- **S**low gastric emptying
- **L**ose weight
- **I**njectable (except oral semaglutide)
- **M**TC (thyroid cancer) warning (MEN2)
- **W**eekly options available

★ SGLT2s – **PEE-H**
- **P**ee more (osmotic diuresis)
- **E**uglycemic DKA risk
- **E**xtra genital yeast infections & UTI's
- **H**eart failure & renal benefit

★ TZDs – **WHEE**
- **W**eight gain
- **H**eart failure and fractures
- **E**dema
- **E**nhances insulin sensitivity

★ Hormonal therapy (Estrogen/Progesterone) – **BLOAT**
- **B**reast cancer risk
- **L**egs (↑ VTE risk)
- **O**lder age = higher risk
- **A**void in active cancer/VTE
- **T**reats menopausal symptoms

★ SERMs (Raloxifene, Tamoxifene) – **BONES**
- **B**one protection
- **O**pposite effects by tissue
- **N**o endometrial cancer (raloxifene)
- **E**strogen agonist/antagonist
- **S**troke/VTE risk

★ Aromatase Inhibitors – **FAVER**
- **F**racture risk/bone loss
- **A**djuvant in breast cancer treatment
- **V**asomotor symptoms (hot flash, night sweats, etc)
- **E**strogen suppression
- **R**isk of cardiovascular effects

★ Bisphosphonates – **FAST-J**
- **F**irst-line for osteoporosis
- **A**void lying down x 30 min
- **S**tomach/esophageal irritation
- **T**ake on empty stomach with full glass of water
- **J**aw osteonecrosis (rare)

★ Thionamides – **STAMPED**

- **S**ore throat = **S**TOP
- **T**PO inhibition
- **A**fter 1st trimester use Methimazole
- **M**ethimazole preferred (longer t1/2, less toxicity)
- **P**TU (propylthiouracil) worse hepatotoxic
- **E**ruptions (derm reactions)
- **D**elayed effects (takes time to work)

★ T4 (Levothyroxine) – **THYROID-L**

- **T**itrate carefully
- **H**eart effects
- **Y**ields CNS effects in toxicity
- **R**isk to bones
- **O**bserve metabolism
- **I**nteractions matter
- **D**elayed full effects
- **L**oss of weight if excessive dose

★ Desmopressin – **WATER**

- **W**ater retention
- **A**void in hyponatremia
- **T**itrate carefully
- **E**ffective for Diabetes insipidis
- **R**eceptors V2 (**R**enal effects only)

Neurology:

★ SSRIs – **SAD-GI**
- **S**exual dysfunction and low **S**odium
- **A**nxiety and depression indication
- **D**iscontinuation syndrome
- **G**I upset (Sertraline is the worst for diarrhea)
- **I**nhibit CYP (varies by agent)

★ SNRIs – **BP-N**
- **B**lood pressure ↑ (dose related)
- **P**ain benefit (neuropathy)
- **N**ausea

★ TCAs – **DEATH**
- **D**ysrhythmias
- **E**KG monitoring (QT prolongation)
- **A**nticholinergic effects
- **T**oxic in overdose
- **H**ypotension (orthostasis)

★ Serotonin modulators (Trazodone, Vortioxetine)– **SLEEP**
- **S**edation
- **L**ow sexual dysfunction
- **E**rectile adverse effect (priapism–trazodone)
- **E**lderly fall risk
- **P**artial serotonin activity

★ Alpha-2 antagonist (Mirtazapine) – **HUGS**
- **H**istamine blockade
- **U**p appetite
- **G**ain weight
- **S**leepy

★ NDRI (Bupropion) – **ACTIVE**
- **A**ctivating, may cause **a**nxiety
- **C**ontraindicated in seizures/eating disorders
- **T**obacco cessation & **T**remor
- **I**nhibits NE & DA
- **V**ery low sexual SE
- **E**nergy ↑

★ Anxiolytic (Buspirone) – **SLOW**
- **S**low onset (2-4 weeks), **S**afer than Benzos in the elderly
- **L**ow sedation
- **O**k in long-term use
- **W**on't cause dependence

★ Antihistamines (1st gen - diphenhydramine) – **DRY**
- **D**rowsy
- **R**etention (urinary)
- **Y**ucky anticholinergic effects

★ Benzodiazepines – **SCARE**
- **S**edation
- **C**ognitive impairment
- **A**ddiction
- **R**espiratory depression
- **E**lderly fall risk (BEERS)

★ FGAs (Typical Antipsychotics) – **EPS**
- **E**PS
- **P**rolactin ↑
- **S**evere dystonia (acute)

★ SGAs (Atypical Antipsychotics) – **MET-S**
- **M**etabolic syndrome
- **E**PS (less than FGAs)
- **T**D (still possible)
- **S**edation

★ Mood stabilizers – **BLAST**
- **B**lood monitoring (lithium/valproate)
- **L**iver toxicity (valproate)
- **A**void in pregnancy
- **S**kin rash (lamotrigine)
- **T**hyroid & kidney (lithium)

★ Phenytoin – **PHENITOX**
- **P**lasma monitoring
- **H**air changes
- **E**nzyme inducer (CYP3A4, 2C9, 2C19)
- **N**eurologic SE (Ataxia, tremor, ect)
- **I**mmune SE (Yellow brown rash, SJS/TENs)
- **T**eratogenic
- **O**steoporosis
- E**X**cessive toxicity risk with small dose changes

★ Levetiracetam – **BRAKE**
- **B**ehavioral changes
- **R**enal dose adjustments
- **A**lertness/**A**taxia
- **K**inetic simplicity (few DDI)
- **E**mergent Rash (SJS/TENs)

★ Valproic Acid – **LIPIDS**
- **L**iver failure
- **I**nhibitor of enzymes
- **P**regnancy risk (Teratogenic)
- **I**ncreased Ammonia
- **D**ose monitoring
- **S**ystemic gains (weight)

★ Carbamazepine – **CHEWS**
- **C**YP Inducer (3A4, 2C9, 1A2)
- **H**LA-B*1502 (risk of SJS)
- **E**poxide metabolite
- **W**ater retention (SIADH risk)
- **S**afety risk for blood (Anemia/Agranulocytosis)

★ Lamotrigine – **LAMOS**
- **L**amotrigine rash
- **A**septic meningitis risk
- **M**aintenance for Bipolar
- **O**ral contraceptives DDI
- **S**low for dose titration →**S**JS black box (rash)

★ Topiramate – **STONES**
- **S**tones (kidney)
- **T**eratogenic
- **O**ligohidrosis
- **N**euro-slowing (“Dopamax”)
- **E**lectrolytes (HCO3 and Metabolic acidosis)
- **S**ensory tingling

★ Z-drugs – **DREAM**
- **D**izziness
- **R**are parasomnias
- **E**lderly fall risk (BEERS)
- **A**mnesia
- **M**imic benzo effects

★ Triptans – **CV**
- **C**oronary vasoconstriction
- **V**ascular disease contraindication

★ CGRP – **HEAD**
- **H**eadache prevention
- **E**asy dosing (monthly)
- **A**ntibody or oral options
- **D**rug interactions minimal

★ Stimulants – **FAST**
- **F**ocus ↑
- **A**ppetite ↓
- **S**leep ↓
- **T**achycardia/BP ↑

★ Dopamine agonist – **HOLE**
- **H**allucinations
- **O**bsessive behaviors (eating/gambling, etc.)
- **L**ow BP
- **E**dema

★ Anticholinergic – **HOT**
- **H**yperthermia
- **O**bstruction (urinary)/constipation
- **T**achycardia

★ NMDA – **CALM**

- **C**ognition preservation
- **A**lzheimer's (moderate-severe)
- **L**ow side effects
- **M**odulates glutamate

★ Acetylcholinesterase inhibitors – **SLUDGE**

- **S**alivation
- **L**acrimation
- **U**rination
- **D**iarrhea
- **G**I cramps
- **E**mesis

★ Gabapentinoids – **ANERT**

- **A**taxia/dizziness
- **N**europathic pain/seizures
- **E**uphoria/abuse potential
- **R**enal dose adjustments
- **T**aper slowly

Gastrointestinal and Genitourinary:

★ H2 receptor antagonists – **ACID** ↓
- **A**cid ↓ (basal & nocturnal)
- **C**NS effects (elderly, cimetidine)
- **I**nteractions (cimetidine = CYP inhibitor)
- **D**elirium risk (poor renal function)
- ↓ pepsin

★ PPIs – **MAGIC**
- **M**g2+ ↓
- **A**cid suppression (most potent)
- **G**I infections (C.diff)
- **I**nterstitial nephritis
- **C**a2+ absorption ↓ / fractures

★ 5-alpha reductase inhibitor – **SHRINK**
- **S**hrinks prostate
- **H**air growth
- **R**educes PSA
- **I**mpotence
- **N**eed months for effect
- **K**ids/pregnancy risk

★ Alpha-1 blocker (BPH) – **FLOP**
- **F**irst-dose syncope and Floppy iris syndrome
- **L**ower urinary symptoms
- **O**rthostasis
- **P**ressure ↓

★ Antimuscarinic – **DRY MAD**
- **D**ry mouth
- **R**etention (urinary)
- **Y**awn vision (blurred)
- **M**emory issues (confusion)
- **A**void in glaucoma
- **D**elirium (elderly)

★ Beta-3 agonist (mirabegron) – **RELAX**
- **R**elaxes detrusor
- **E**levates BP
- **L**ess dry mouth
- **A**lternative to anticholinergics
- **X**tra caution in HTN

★ Anticholinergic – **HOT BLIND**
- **H**yperthermia
- **O**utflow obstruction
- **T**achycardia
- **B**lurred vision
- **L**ow saliva
- **I**leus
- **N**euro effects
- **D**elirium

★ Antidiarrheal (loperamide) – **STOP**
- **S**lows motility
- **T**oxic megacolon risk
- **O**pioid receptor (peripheral)
- **P**ediatric caution

★ 5-ASA (mesalamine) – **COLON**
- **C**olitis control
- **O**nce daily options
- **L**ocal gut action
- **O**utside gut minimal effects
- **N**ephrotoxicity (rare)

Infectious Disease:

★ Pencillins – **PEN SAFE**
- **P**regnancy safe
- **E**nterococcus
- **N**eisseria (some)
- **S**yphilis
- **A**llergy
- **F**irst-line common infections
- **E**nzyme resistance (B-lactamase)

★ 1st gen cephalosporin – **PEK**
- **P**ositive cocci
- **E.** coli
- **K**lebsiella

★ 2nd gen cephalosporin – **HEN PEK**
- **H.** influenzae
- **E**nterobacter
- **N**eisseria
- **PEK**

★ 3rd gen cephalosporin – **SPACES**
- **S**erratia
- **P**seudomonas (ceftazidime)
- **A**cinetobacter
- **C**itrobacter
- **E**nterobacter
- **S.** pneumonia

★ 4th gen cephalosporin – **PSYCH**
- **P**seudomonas
- **S**trong gram +
- **Y**-lactamase stable
- **C**NS penetration
- **H**ospital infections

★ 5th gen cephalosporin – **MRSA**
- **M**RSA
- **R**espiratory pathogens (CAP)
- **S**STI
- **A**typicals (limited)

★ Carbapenems – **PEARLS**
- **P**seudomonas
- **E**nterobacter
- **A**naerobes
- **R**esistant gram -
- **L**isteria
- **S**trep and Staph (MSSA)

★ Monobactams (Aztreonam) – **NEG**
- **N**eisseria
- **E**nterobacter
- **G**ram - (including Pseudomonas)

★ Glycopeptides (vancomycin) – **GRAB-C**
- **G**ram +
- **R**ed man syndrome
- **A**ctive against MRSA
- **B**owel infection (C. diff)
- **C**heck kidneys and therapeutic levels

★ Lipoglycopeptides – **MR. COPS**
- **M**RSA
- **R**esistant gram +
- **C**lostridium
- **O**ther strep
- **P**neumococcus
- **S**taph (MSSA)

★ Aminoglycosides – **PENG-NOT**

- **P**seudomonas
- **E**nterobacter
- **N**eisseria
- **G**ram -
- **N**ephrotoxicity
- **O**totoxicity
- **T**eratogenic

★ Macrolides – **MAC QT**

- **M**otility ↑
- **A**typicals
- **C**YP inhibition
- **Q**T prolongation
- **T**aste/GI upset

★ Flouroquinolones – **TENDON**

- **T**endon rupture
- **E**levated QT
- **N**euro effects
- **D**ysglycemia
- **O**ld adults caution
- **N**o pregnancy

★ Tetracyclines – **TEETH**

- **T**eeth discoloration
- **E**sophagitis
- **E**nteric absorption ↓ (Calcium, iron, zinc)
- **T**eratogenic
- **H.** pylori/atypicals

★ Lincosamide (clindamycin) – **BAD GUT**

- **B**acteroides
- **A**naerobes
- **D**iarrhea
- **G**ram + cocci
- **U**pper body infections
- **T**oxic megacolon (C.diff)

★ Oxazolidinones – **GRABS-B**

- **G**ram +
- **R**esistant strains (MRE, MRSA)
- **A**naerobes (limited)
- **B**one marrow suppression
- **S**taph and Strep
- **B**rain effects (possible serotonin syndrome)

★ Nitroimidazole (metronidazole) – **FLAG**

- **F**lagyl
- **L**iver metabolism
- **A**lcohol reaction (maybe not as severe as once thought)
- **G**iardia/anaerobes

★ Sulfonamides (TMP-SMX) – **SULFA**

- **S**JS
- **U**rine crystals
- **L**ow glucose (↑ insulin)
- **F**olate inhibition
- **A**llergy

★ Polymyxins – **GRAM-P**

- **G**ram -
- **R**esistant strains
- **A**cinetobacter
- **M**oraxella (some)
- **P**seudomonas

★ Rifamycins – **TRIBE-C-HR**

- **T**uberculosis
- **R**ifampin-sensitive mycobacteria
- **I**ntracellular pathogens (Legionella)
- **B**road gram + (some staph)
- **E**nteric bacteria (limited)
- **C**YP3A4 DDIs
- **H**epatotoxic
- **R**ed-orange body fluids

★ Antivirals (acyclovir class) – **VIRUS**
- **V**iral DNA inhibition
- **I**V hydration (crystals)
- **R**enal toxicity
- **U**ptake via viral kinase
- **S**hingles/HSV

★ NRTIs (tenofovir, emtricitabine, abacavir, lamivudine, zidovudine) – **BACKBONE**
- **B**ackbone of ART (usually 2 drugs)
- **A**bnormal lactic acidosis (mitochondrial toxicity)
- **C**reatinine/bone issues (TDF)
- **K**idney toxicity (TDF)
- **B**one density ↓ (TDF)
- **O**verlap with Hep B (TDF/TAF, FTC, 3TC)
- **N**ausea/GI
- **E**nd with "-ine/-vir" (many)

★ NNRTIs (efavirenz, rilpivirine, etravirine, doravirine) – **RASHY**
- **R**ash (SJS possible)
- **A**ltered CNS effects (efavirenz dreams)
- **S**trong CYP interactions
- **H**epatotoxicity
- **Y** = "You can't mix with everything" (DDIs)

★ Protease Inhibitors (darunavir, atazanavir, lopinavir/ritonavir) – **PROBLEM**
- **P**otent, high barrier to resistance
- **R**itonavir boosting (CYP3A4 inhibitor)
- **O**besity/lipodystrophy
- **B**lood sugar ↑ (hyperglycemia)
- **L**ipids ↑
- **E**nzyme inhibition = tons of DDIs
- **M**etabolic syndrome

★ Integrase Inhibitors (dolutegravir, bictegravir, raltegravir) – **INTEGRATE**

- **I**nitial first-line
- **N**o major toxicity usually
- **T**ypically rapid viral load drop
- **E**levated weight (some pts)
- **G**I upset
- **R**eacts with polyvalent cations (Ca/Mg/Fe)
- **A**void taking with antacids same time
- **T**olerated well
- **E**ffective

★ Entry/Fusion/Attachment Inhibitors (maraviroc, enfuvirtide) – **OUTSIDE**

- **O**nly used special cases/resistance
- **U**nique mechanisms
- **T**ropism testing (maraviroc)
- **S**ubQ injection (enfuvirtide)
- **I**njection site reactions
- **D**rug interactions possible
- **E**xpensive/less common

★ Antifungals – **AZOLE**

- **A**ll ↑ QT
- **Z**ymes (CYP inhibition)
- **O**ral absorption issues
- **L**iver toxicity
- **E**rgosterol ↓

★ Echinocandins – **FITS**

- **F**ungal coverage
- **I**V only
- **T**hrombophlebitis and infusion reactions
- **S**ky high LFTs

Analgesic and Anti-Inflammatory Agents:

★ Opioids – **MORPHINE**
- **M**iosis (pinpoint pupils)
- **O**verdose
- **R**espiratory depression
- **P**hysical dependence/tolerance/addiction
- **H**ypotension (histamine, esp. morphine)
- **I**leus/constipation
- **N**ausea AE and Narcan reversal
- **E**uphoria/sedation

★ NSAIDs/Anti-inflammatory – **GRENAL**
- **GI** bleed
- **R**enal injury
- **E**dema
- **N**o pregnancy (3rd tri)
- **A**nalgesic and antipyretic
- **L**ower prostaglandins

★ Xanthine oxidase inhibitors – **DROP UA**
- **D**ecrease uric acid
- **R**ash (SJS risk)
- **O**utbreaks from high uric acid (gout flare)
- **P**urinol interactions (Azathioprine)
- **UA** stones ↓

★ Corticosteroids – **CUSHING**
- **C**ataracts
- **U**lcers
- **S**ugar ↑
- **H**ypertension
- **I**nfection risk
- **N**ecrosis (AVN)
- **G**rowth suppression

★ DMARDs – **SLOW**
- **S**low onset
- **L**abs required
- **O**rgan toxicity (liver)
- **W**orsen infections (immunosuppressant activity)

★ TNF-alpha (Humira, Enbrel, Cimzia, Remicade) - **ASIAS**

- **A**LT/AST increase
- **S**creening for TB prior to initiation
- **I**mmune suppression - increased risk of infections
- **A**void live vaccines
- **S**ite of injection reaction - rash, itching, swelling, or pain

★ JAK inhibitors (Rinvoq, Xeljanz, Opzelura) - **CHAIR**

- **C**holesterol increases (total, LDL, and HDL)
- **H**eadache, acne, fatigue
- **A**dministration: topical or oral instead of an injection
- **I**mmune suppression - increased risk of infections
- **R**isk of major cardiovascular events (MI, nonfatal stroke, CV death)

Respiratory:

★ SABA (albuterol) – **FAST**
- **F**irst-line rescue ideally with an inhaled corticosteroid
- **A**lbuterol = tremor/anxiety
- **S**timulates B2 → bronchodilation
- **T**achycardia

★ SAMA (ipratropium) – **SLOW**
- **S**hort acting
- **L**ess systemic effects
- **O**utput secretions ↓ (dry mouth)
- **W**orks best in COPD

★ LABA (salmeterol, formoterol) – **CONTROL**
- **C**ontroller (not rescue)
- **O**nset varies (formoterol fast-ish, can use for rescue)
- **N**ever use alone in asthma
- **T**achycardia/tremor possible
- **R**educes symptoms/exacerbations
- **O**ften combined with ICS (asthma)
- **L**ong duration (~12 h)

★ LAMA (tiotropium, umeclidinium) – **COPD**
- **C**OPD cornerstone
- **O**utput secretions ↓ (dry mouth)
- **P**revents exacerbations
- **D**on’t use as rescue

★ ICS (budesonide, fluticasone) – **RINSE**
- **R**educes inflammation
- **I**mproves asthma control
- **N**ot for acute rescue
- **S**ide effects: thrush/hoarseness
- **E**nsure mouth rinse after use

★ LTRA – **LUNGS**
- **L**ong term controller
- **U**seful for EIB
- **N**europsychiatric black boxed warning
- **G**ood adjunct for ICS
- **S**afe generally

★ Methylxanthines (Theophylline) – **TOXIC LUNG**
- **T**achyarrhythmias (cardio-toxic)
- **O**verstimulation (CNS)
- E**X**treme seizures (significant sign of toxicity)
- **I**ncreases cAMP (bronchodilation)
- **C**YP1A2 interactions (macrolides, FQ, Smoking)
- **L**ow therapeutic window
- **U**pset stomach (nausea)
- **N**ot first line
- **G**eriatrics at high risk

★ PDE-5 inhibitors (Sildenafil, Tadalafil) – **PAH RELIEF**
- **P**ulmonary arterial hypertension (group 1)
- **A**mplifies NO
- **H**ypotension
- **R**ight ventricular afterload reduction
- **E**ye changes
- **L**ong vs short acting (Tad = Long)
- **I**nteractions (Nitrates)
- **E**NT warning (sudden hearing loss)
- **F**irst line oral class