PCOL SUMMARY

Receptors

Type	Name	Mechanism	Example
I	Ligand-gated ion channels/Ionotropic (LGIC)	Depolarization (+) – excite/stimulate Hyperpolarization (-) – relax/inhibitory	$GABA_A$ Nicotinic
II	G-protein coupled/Metabotropic (GPCR)	Gs – activates adenylyl cyclase - ↑ cAMP • β1 - ↑ contraction (heart) • β2 – bronchodilation (lungs) Gi – inhibit adenylyl cyclase - ↓ cAMP • α_2, M_2 Gq – increase phospholipase C • contraction • α_1, M_1, M_2	Sympathetic • α_1, α_2, β_1, β_2 • Gq, Gi, Gs, Gs – QISS Muscarinic • M_1, M_2, M_3 • Gq, Gi, Gq – QIQ
III	Tyrosine-kinase linked (transferase)	Phosphorylation – transfer of PO4	Insulin receptors
IV	Gene transcription linked	Transcription – RNA synthesis Found in the nucleus	Steroidal & Thyroid hormone receptors

ANS

Sympathetic	Parasympathetic
Fight or flight When stress Adrenergic	Rest and digest Basal Cholinergic
Thoracolumbar	Craniosacral
Short pre	Long pre
Long post	Short post
Near CNS/spinal cord	Near effector/organ
Pre: Ach Post: NE	Pre: Ach Post: Ne
Ganglion N_N	Ganglion N_N
Effector: α & β	Effector: M & N

	Sympathetic Relax except tachycardia	**Parasympathetic** Constrict except bradycardia
Eye	Mydriasis	Miosis
Heart	Tachycardia	Bradycardia
Glands	Sweating: apocrine – palms & soles	Sweating: eccrine – generalized
Bronchial muscle	↓ tone: bronchodilation	↑ tone: bronchoconstriction
GI tract	Ileus (loss of peristalsis)	Bowel movement/diarrhea
Urinary bladder	Urine retention	Urination/Micturition/Enuresis

G_q	Smooth muscle contraction
G_i	Inhibitory effect (dec BP, insulin release)
G_s, β1	Kidneys – juxtaglomerular (inc. BP) - RAAS Heart → Inotrophy - force → Chromotrophy – rate → Dromotrophy – conduction velocity

G_S, β2	Smooth muscles – relaxed → Uterine SM – tocolysis; blood vessels and bronchial smooth muscles → skeletal muscle contraction – ↑K^+ uptake S/E: hypokalemia
β3	Lipolysis – weight loss

Type of Receptor	Locations	Effects
α_1: Gq ↑Phospholipase C ↑DAG, IP_3	Radial muscle of the iris Arteriolar smooth muscle GI and GU, trigone and sphincters Pilomotor smooth muscle Seminal vesicle smooth muscle Liver	Pupillary dilation Increase PR and BP Retention Piloerection Ejaculation Glycogenolysis and gluconeogenesis
α_2: Gi ↓adenylyl Cyclase ↓cAMP	Presynaptic nerve terminals Platelets Pancreatic β cells	Inhibits release of NE (presynaptic inhibition) Aggregation Inhibits insulin release (hyperglycemia)
β_1: Gs	Heart Juxtaglomerular cells	Increase in heart rate, contractility and conduction Incr in secretion of renin (incr BP)
β_2: Gs ↑adenylyl Cyclase ↑cAMP	Vascular smooth muscle Bronchiolar smooth muscle GI and urinary bladder (detrusor-β) smooth muscle Uterine smooth muscle Skeletal muscle Liver	Vasodilation (relaxation) Bronchodilation (relaxation) Decr GI an GU motility (relaxation) Decr uterine contraction (relaxation) Uptake of K+ in skeletal muscles Glycogenolysis & Gluconeogenesis
β_3: Gs	Adipose tissue	Lipolysis

SYMPATHETIC DRUGS

Natural Catecholamines

- **END**ogenous – polar → impermeable to CNS
  - → Epinephrine (adrenaline)
  - → Norepinephrine (noradrenaline)
  - → Dopamine
- Tyrosine → tyrosine hydroxylase (RLE) → DOPA → Dopa decarboxylase → Dopamine (1st) → dopamine decarboxylase → Norepinephrine (2nd) →2PNMT → Epinephrine
- Brain – NE
- Periphery – EPI
- Dopamine storage – Reserpine
- Released enhanced – TEAAM
- Released inhibited – GGB
- COMT – capone
- MAO – MPITS
- Mimetic – agonist
- Lytic – antagonist

Sympathomimetic

- Agonist

Direct

- Non-selective
  - → Epinephrine – (b1, b2, a) vasoconstrict w/ *Lidocaine*
  - → Norepinephrine – b1 & a, rare
  - → Dopamine – (b1 & a1) D1 → renal vasodilation → ↑GFR → diuresis
- Selective
  - → B-adrenoceptor – synthetic catecholamines
    - Non-selective
      - Isoprenaline/Isoproterenol
    - Selective b1
      - Dobutamine
    - Selective b2
      - Bronchodilators – terols
        - SABA – SAMPiT
        - LABA – FIBS
      - Tocolytics – rine
        - RITe
  - → A-adrenoceptor – constrictors
    - Selective a1
      - Phenylephrine, Methoxamine, Metaraminol
        - Vasoconstrictors
      - Xylometazoline, Oxymetazoline
        - Decongestant – after 3 days rhinitis medicamentosa
    - Selective a2
      - sympathetic tone – bronchodilation (relax) → reduce bp
      - Guanabenz, Guanfecine
      - Methyldopa (Aldomet)
        - Sedation & coomb's test
        - HTN in Pregnant – MaHaLiN
      - Clonidine (Catapress)
        - HTN crisis
        - Vasodilation → vasoconstriction

Indirect

- Releasers – exocytosis
  - → Ephedrine & Mephentermine
    - Non catechol, less potent than EPI
    - Ephedrine – Ma Huang
  - → Pseudoephedrine
    - Isomer of ephedrine
    - Precursor of shabu
- Reuptake inhibitors
  - → SSRIs
  - → TCAs

Mixed

- Amphetamine, Dextroamphetamine, Methamphetamine, Hydroxyamphetamine, Phendimetrazine, Methylphenidate, Modafinil
- Enter CNS → polar and lipophilic (except Hydroxyamphetamine) → stimulant

Sympatholytic

- Antagonist

Direct

- Alpha – vasodilation (1a→relax = ↓BP) & relief of urinary retention; Epinephrine reversal
  - → Non-selective (phen & mine)
    - Phenoxybenzamine – irreversible, non-competitive
      - ➢ before surgery for Pheochromocytoma (tumor) to block HTN crisis
    - Phentolamine – reversible, competitive
      - ➢ during surgery
  - → A1 selective (zosin)
    - Prazosin (essential HTN), Doxazosin, Terazosin, Alfuzosin, Tamsulosin (greater efficacy)
      - ➢ urinary obstruction
  - → A2 selective
    - Yohimbine, Rauwolscine
- Beta – lol/olol
  - → B1 selective – BBEAAM
    - Bisoprolol, Betaxolol, Esmolol (shortest DOA), Atenolol, Acebutolol, Metoprolol
  - → Non-selective – NSTP
    - Nadolol, Sotalol, Timolol, Propranolol
  - → B w/ ISA – b1 blocker but b2 agonist – ISA PA
    - Acebutolol, Pindolol
  - → B w/ a-blocking – beta blockers w/ vasodilation – ABC Label
    - Labetalol, Carvedilol
  - → B2 selective – no therapeutic application
    - Butoxamine
  - → Prophylaxis for angina pectoris – Timolol, Propranolol, Metoprolol
  - → For glaucoma – Timolol, Betaxolol
  - → Propranolol – hyperthyroidism, migraine, stage fright

Peripherally acting – Adrenergic Neuronal blocker

- Reserpine – inhibits storage of DA
- GGB – inhibit exocytosis (release) of NE

PARASYMPATHETIC DRUGS

MUSCARINIC RECEPTORS	
M1 stomach	**G_q** – gastric gland, HCl increase
M2 heart	**G_i** – bradycardia
M3	**G_q –** exocrine glands [lacrimal, sweat, salivary – WET] -- smooth muscle contraction (miosis, near-vision effect, bronchoconstriction, GIT and urinary bladder contraction (urination), bowel movement (diarrhea)

NICOTINIC RECEPTORS	
N_N	Ganglion and adrenal medulla stimulation
N_M	Skeletal muscle contraction

Parasympathomimetic/Cholinomimetic

Direct

- Alkaloids
  - → Non-selective
    - Arecoline
  - → Muscarinic selective - PiloMus
    - Pilocarpine
    - Muscarine
  - → Nicotinic selective – Nag VaLo si Nico
    - Nicotine
    - Lobeline
    - Varenicline
- Choline esters
  - → Non-selective – Ace CaMe
    - Acetylcholine
    - Metacholine
    - Carbachol
  - → Muscarinic – May muscle si beth
    - Bethanecol

Indirect/Anticholinesterase

- Reversible – safe
  - → Amino alcohol – Alcoholic si Edro at Tensilon
    - Edrophonium (Tensilon)
  - → Carbamates (-stigmine)
    - Physostigmine (Eserine)
    - Pyridostigmine
    - Neostigmine
    - Ambenonium
    - Demecarium
- Irreversible – toxic
  - → Organophosphates – Para Mala Echo
    - Echotiophate (only useful)
    - Malathion
    - Parathion
    - Nerve gases: Soman, Tabbun, Sarin
- CNS acting: Alzheimer
  - → Tacrine
  - → Donepezil
  - → Galantamine
  - → Rivastigmine
- **DUMBBELSS**

Parasympatholytic

Muscarinic antagonist/anticholinergic

- Alkaloids
  - → Atropine (prototype)
  - → Scopolamine
  - → Homatropine
- Synthetic-tertiary compounds
  - → Dicyclomine
  - → Oxybutynin, Flavoxate, Tolterodine

→ Trihexyphenidyl, Biperidine, Benztropine

- Synthetic-quaternary compounds
  → Propantheline
  → Methscopalamine
  → Clidinium bromide
  → Mepenzolate
  → Methantheline
  → Glycopyrrolate
- Tricyclic benzodiazepine
  → Pyrenzepine
- **Alice in wonderland effects**
  → Blind as a bat
  → Dry as a bone
  → Mad as a hatter
  → Hot as hare
  → Red as beet

Nicotinic antagonist

- Ganglionic blockers – obsolete
  → Hexamethonium, Trimethaphan, Mecamylamine
- Neuromuscular blockers/skeletal muscle relaxant
  → Non-depolarizing
    - Isoquinoline (curium)
      - Atracurium
      - Tubocurarine
    - Steroidal
  → Depolarizing
    - Succinylcholine

CARDIOVASCULAR DRUGS

HTN

Diuretics – decreased BV

Natriuretics – excretion of Na in the urine

- Carbonic anhydrase inhibitors – la/namide
  - → Acetazolamide
  - → Dorzolamide
  - → Brinzolamide
  - → Dichlorophenamide
- Loop diuretics – m/nide (FuBu ToE)
  - → Furosemide
  - → Bumetanide
  - → Torsemide
  - → Ethacrynic acid
- Thiazide diuretics
  - → Chlorothiazide & HCTZ (prototypes)
  - → Metolazone
  - → Chlorthalidone
  - → Indapamide (thiaze-like)
- Potassium sparing diuretics
  - → Aldosterone antagonist
    - Spironolactone
    - Eplerenone
  - → ENaC inhibitors
    - Amiloride
    - Triamterene

Aquaretics

- Osmotic agents
  - → Mannitol
  - → Glycerin
  - → Urea, Hypertonic Saline
- Vasopressin modifiers
  - → Vasopressin or analogues
    - Desmopressin
  - → ADH antagonist
    - Demeclocycline
    - Conivaptan
    - Tolvaptan

Criterion	Vasopressin deficiency	Vasopressin excess
Disease	Diabetes Insipidus	SIADH (Syndrome of Inappropriate ADH Secretion)
Drugs	Vasopressin agonist (-pressin)	Vasopressin antagonist (-vaptan)
Non selective	Vasopressin	Conivaptan
V2 selective	Desmopressin	Tolvaptan

Sympathoplegics – decreased CO & PVR

- Beta blockers – olol
- Alpha blockers – zosin

- Ganglionic blockers – obsolete
- Adrenergic neuronal blockers – Reserpine & GGB

Vasodilators – decreased PVR

Mechanism of Vasodilation	Drug
Release of nitric oxide ↑cGMP = vasodilation	• Hydralazine • Nitroprusside • Nitrates
Opening of potassium channels and hyperpolarization (-) = relaxation	• Minoxidil sulfate • Diazoxide
Block L-type calcium channels - Heart and arteries (ugat)	• Calcium channel blockers → Nifedipine → Diltiazem
Activation of dopamine receptor (D1)	• Fenoldopam

Direct arteriolar dilators

- Minoxidil, Diazoxide, Hydralazine

Mixed vasodilator

- Sodium nitroprusside

Calcium Channel blockers

- **Based on chemistry and site of action**
  - → Non-DHPs (heart-cardio selective)
    - Verapamil (most)
    - Diltiazem (heart and arteries)
  - → DHPs (ugat-vaso selective) -dipine
    - Nifedipine
    - Amlodipine
- **Based on duration of action**
  - → Intrinsically SA
    - All non-DHPs & DHPs (except LAL [Lercanidipine, Amlodipine, Lacidipine])
  - → Intrinsically LA
    - Lercanidipine, Amlodipine, Lacidipine (LAL)
  - → Modified LA
    - Intrinsically SA but available as modified release

Angiotensin antagonist – decreased BV, PVR

- ACE inhibitors (-pril)
- ARBs (-sartan)
- Renin inhibitor – Aliskiren

ANGINA PECTORIS

Vasodilators

- Nitrates
- CCBs

Non-vasodilators

- Beta-blockers

HF

Unloader medications (Afterload – 1st line):

- ACEI/ARBs
- Diuretics
- Vasodilators
- Beta blockers
  → Bisoprolol, Metoprolol succinate, Carvedilol, Nebivolol

Inotropic agents

- Cardiac glycosides
  → Digoxin & Digitoxin
- Beta agonist
  → Dobutamine & Dopamine
- PDE3 inhibitor
  → Bipyridines: Inamrinone & Milrinone

Drug	MOA	Effects
Cardiac glycosides: Digoxin	Inhibition of Na, K, ATPase → ↑ Ca (intracellular in the heart)	+ ino (malakas) & - chrono (mabagal)
B1 agonist Dobutamine & Dopamine	Activate B1 receptors → ↑ cAMP	+ ino & +chrono Malakas at mabilis
PDE3 inhibitors Bypiridines: Inamrinon & Milrinone	PDE3 inhibition → ↑ cAMP	+ino & +chrono Malakas at mabilis

ARRHYTHMIA

Class	Mechanism of Action
I	Na channel blockade
II	Beta blockade
III	Prolongation of ERP by blocking K channels
IV	Ca channel blockade

Class I: Na channel blockers

Criterion	IA	IB	IC
Na channel blockade	Moderate	Weak	Strong
Action Potential Duration	Prolong	Shorten	Don't have effect
Examples:	DQP Double Quarter Pounder	TMLP Too Much Love makes you Pregnant	MFPE More Fries PleasE

Class II: Beta blockers

- Propranolol, Metoprolol, Nadolol, Timolol

Class III: K channel blockers

- Sotalol, Amiodarone (iodine), Ibutilide, Dofetilide, Bretylium, Dronedarone (no iodine)

Class IV: Ca channel blockers

- Verapamil – NDHPs (cardioselective –heart)

HEMATOLOGIC DRUGS

COAGULATION

Antithrombotic

Anticoagulant

Direct	Indirect
Parenteral: Hirudin Lepirudin Bivalirudin Argatroban Oral: Dabigatran	Parenteral Heparin: Unfractionated/regular LMW (Enoxaparin, Dalteparin, Tinzaparin) Oral: Coumarin derivatives: Warfarin Newer: Apixaban, Rivaroxaban

Criterion	Heparin	Warfarin
ROA	Parenteral – short term	Oral – long term
MOA	Inhibit action of CFs (Xa, IIa)	Inhibit synthesis of CFs (1972)
SOA	Blood	Liver
Onset	Immediate	Delayed
Anti-CF targeted	AT-III	Protein C & S
Monitoring	aPTT	PT-INR
Pregnancy	✓ (LMWH)	×
Antidote	Protamine SO4	Vit K1

Antiplatelet

MOA	Examples
COX inhibitor → ↓ TXA 2	Aspirin
ADP inhibition	Clopidogrel & Ticlopidine
PDE inhibitors	Dipyridamole, Cilostazole
GP IIb/IIIa inhibitors	Eptifibatide, Abciximab, Tirofiban

Fibrinolytic – "ase"

Properties and Uses of Thrombolytics			
Drug	**Composition**	**Properties**	**Uses**
Alteplase	Recombinant natural human tPA	Activity more localized to fibrin clot	AMI; stroke
Reteplase	Recombinant fragment of human tPA	Smaller than native tPA; in theory, diffuses into fibrin clot more readily	AMI
Duteplase	Recombinant human tPA with a single amino acid change	Activity more localized to fibrin clot	AMI
Streptokinase	Bacterial glycoprotein; activates plasminogen	Not targeted specifically to fibrin in clots	AMI; deep vein thrombosis
Urokinase	Produced in the kidney; activates plasminogen	Not targeted specifically to fibrin in clots	Acute massive pulmonary emboli; AMI
AMI, acute myocardial infarction, tissue plasminogen activator			

Pro-thrombotic

- Vitamin K
- Tranexamic acid
- Aprotinin

DYSLIPIDEMIA		
Drug class	**MOA**	**Notes**
Statins: Lovastatin Simvastatin Pravastatin Fluvastatin Atorvastatin Rosuvastatin Except: Nystatin – antifungal	Inhibitors of HMG-CoA reductase = lessen cholesterol	Taken at night 1st line for hypercholesterolemia A/E: Rhabdomyolysis
Fibrates Fenofibrate Clofibrate Gemfibrozil	PPAr-alpha agonist (activation)	1st line for hypertriglyceridemia
Nicotinic acid (Vit. B3)	Inhibiting synthesis & release of VLDL	Most effective in ↑ HDL S/E: Erythema (red) Tx: Aspirin
Bile acid sequesterants Cholestyramine Colestipol Colesevelam	Inhibit biliary recycling → ↑Bile acid secretion going to the stool	S/E: Steatorrhea (fatty stool) Malabsorption of ADEK vitamins (fat soluble)
Ezetimibe	Inhibitor of cholesterol absorption by blocking Niemann-Pick C1 like-1)	Combined w/ statins

ANEMIAS

Iron deficiency anemia:

Iron salt supplements

- Oral
  - → Gluconate
  - → Sulfate
  - → Fumarate
- Parenteral
  - → Ferrous hydroxide & Dextran

Red cell deficiency anemia:

Erythropoietin

- Epoetin alfa, Darbepoetin

Vitamin deficiency:

Vitamin B12
Folic acid (B9)

Myeloid growth factors:

- Sargramostim
- Filgrastim, Pegfilgrastim
- Oprelvekin

CNS DRUGS

Neurotransmitters

Excitatory	Inhibitory
(+) Depolarization	(-) Hyperpolarization
Na+ channel opening	Cl- channel opening
Stimulation	Depression
Contraction	Relaxation
Example: Acetylcholine Norepinephrine Epinephrine Glutamate (major NT in the brain) Serotonin (5-HT)	Example: GABA (brain) Glycine (spinal cord) (both major)
Both: Dopamine	

PSYCHOSIS – breakdown of personality

- Schizophrenia - ↑DA, ↑ 5-HT, ↑Glutamate

Antipsychotics/Antischizophrenics/Neuroleptics/Major Tranquilizers

1st gen	2nd gen
Typical "classical antipsychotics"	Atypical antipsychotics "newer"
D2 blocker	D4 & $5HT_{2A}$ > D2
Can cause EPS toxicity	Less risk of EPS
Tx: (+) symptoms	Tx: (-) symptoms

- Affective D/O – mood
  - → Major Depression - ↓5-HT, ↓NE

Antidepressants

Drug class	MOA	Notes
TCA -triptyline -pramine	Inhibit reuptake of NE > 5HT	Narrow TI – toxic (3C) Comma Convulsion Cardiotoxicity
SSRIs	Inhibit reuptake of 5HT only	Safer than TCA ↑suicidal thoughts (black box warning) D/I: MAO inhibitors → serotonin syndrome
MAO inhibitors	Inhibit MAO	D/I: Tyramine rich foods → HTN crisis SSRIs → serotonin syndrome
Atypical antidepressant		

  - → Bipolar
    - Lithium

ANXIETY

- Sedation – kalma
- Hypnosis – tulog

Sedative-Hypnotics

Drug	MOA	Notes
Benzodiazepines	GABAergics → Cl- opening (↑ frequency)	-zolam, -zepam, -zep (Chlordiazepoxide Chlorozepate)
Barbiturates	GABAergics → ↑ duration of Cl channel opening	-barbital, -bital, -tal

Zolpidem Zaleplon Eszopiclone	Same as BZD	
Buspirone	Partial $5HT_{1A}$ agonist	
Ramelteon	Melatonin agonist	

PARKINSONS

- ↓DA, ↑Acetylcholine

Increases DA

- Levodopa – combined w/ Carbidopa
- DA agonist – Bromocriptine, Pramipexole,
- COMT inhibitors – capone
- MAO_B inhibitors – Selegiline
- Apomorphine
- Amantadine – antiviral

Decreases Ach

- "Central anticholinergics"
- Trihexyphenidyl, Benztropine, Biperiden

SEIZURE/EPILEPSY

- Promote inhibitory responses
  - → Na channel blockade
  - → Ca channel blockade
  - → GABA ↑
  - → Glutamate ↓

Classical epileptic drugs

Drugs	Na Channel blockers	CCB	↑ GABA
Carbamazepine	✓		
Phenytoin	✓		
Valproic acid 1st line for Grand Mal	✓	✓	✓
Phenobarbital			✓
Ethosuximide 1st line for Petit Mal/ Absence		✓	

Newer agents

Drugs	Na Channel blockers	CCB	↑ GABA	↓ Glutamate
Vigabatrin			✓ Inhibit GABA transferase	
Felbamate			✓ Blocks MMDA receptor	
Gabapentin Analog of GABA				
Pregabaline Analog of gabapentine				
Tiagabine			✓ Inhibit GABA uptake	
Lamotrigine	✓	✓	✓	✓

AUTACOIDS

- 4 types of Autacoids (BESH)
  - → Bradykinin
  - → Eicosanoids
  - → Serotonin
  - → Histamine

HISTAMINE

Receptors

H1	H2	H3	H4
Vascular smooth muscles – relaxation/vasodilation → ↓BP →ANAPHYLACTIC SHOCK	Parietal cells of the stomach → INCREASE GASTRIC ACID PRODUCTION	Inhibitory → DECREASED HISTAMINE	Chemotaxis → INDUCTION OF INFLAMMATION
Extravascular smooth muscle – bronchoconstriction/spasm → SOB			
Sensory nerve endings → PAIN & ITCHINESS			
Endothelium of the blood vessels – contraction → shrink → gaps → LOCALIZED EDEMA OR WHEAL			
Brain → WAKEFULNESS			

Agonist

- Histamine – exogenous
- Betahistine
- Impromidine

Antagonist/Anti-histamines

- **H1 antihistamines**

- 1ST generation – anti-allergy; sedating
  - → Ethanolamines
    - Diphenhydramine
    - Dimenhydrinate
    - Carbinoxamine
    - Doxylamine (Unisom)
  - → Ethylenediamine
    - Pryilamine
    - Tripelennamine
  - → Piperazine
    - Meclizine, Cyclizine
    - Hydroxyzine – prodrug of cetirizine
  - → Alkylamines
    - Chlorphenamine
    - Brompheniramine
  - → Phenothiazine
    - Promethazine (Phenergan)
  - → Piperidines
    - Cyproheptadine

- 2nd generation – less sedating
  - → Less sedating: Piperazines
    - Cetirizine
    - Levocetirizine
  - → Non-sedating: Piperidines
    - Loratadine
    - Desloratadine
    - Fexofenadine

H2 antihistamines

- Cimetidine (prototype)
- Famotidine
- Ranitidine
- Nizatidine

SEROTONIN

5HT1A	5HT1B/1D	5HT2	5HT3	5HT4
Pre-synapse → inhibitory effect → decreases cAMP	Vascular smooth muscles →	↑phospholipase C → CONTRACTION	Inotropic receptors (unique)	Enhances cAMP levels
INHIBITS FURTHER RELEASE OF 5HT	VASOCONSTRICTION	Smooth muscle → CONTRACTION	CTZ → NAUSEA & VOMITING	GIT → PERISTALSIS
		Platelets (blood clot) → AGGREGATION		
		CNS → HALLUCINATION		

Agonist

- Buspirone
- Triptans
  - → Sumatriptan, Naratriptan, Zolmitriptan
- Cisapride, Tegaserod
- Prucalopride

Antagonist

- Cyproheptadine
- Setrons
  - → Ondansetron, Granisetron, Palonosetron

ERGOTS

- Methylergonovine
- Ergotamine
- Methysergide

EICOSANOIDS

Prostaglandin analogs

- Misoprostol
- Epoprostenol
- Dinoprostone
- Alprostadil
- Latanoprost

RHEUMATIC DISORDER DRUGS

ANALGESIC

Non-narcotic

P-aminophenol derivatives

- Acetaminophen/Paracetamol

NSAIDS

- Non-selective COX inhibitor
  - → Aspirin (prototype)
  - → Pyrazolone derivative
    - Phenylbutazone
    - Dipyrone
    - Sulfinpyrazone
  - → Indole derivative
    - Indomethacin
    - Tolmetin
  - → Pyrrole Alkanoic derivative
  - → Phenylacetic acid derivative
    - True phenylacetates
      - ➢ Sulindac
      - ➢ Aclofenac
      - ➢ Diclofenac
    - Acetic acid derivatives
      - ➢ Ketorolac
      - ➢ Etodolac
      - ➢ Nabumetone
  - → Fenamates
    - Mefenamic acid
    - Meclofenamic acid
    - Flufenamic acid
  - → Oxicam derivative
    - Piroxicam
  - → Propionic acid
    - Ibuprofen
    - Naproxen
    - Ketoprofen
    - Flubiprofen
- Specific COX2 inhibitor
  - → Celecoxib
  - → Etoricoxib
  - → Valdecoxib
  - → Rofecoxib

Narcotic/Opioid agonist

Based on source

- Opiates
  - → Morphine
  - → Codeine
  - → Thebaine
- Opioids
  - → Semisynthetic
    - Heroin (Diacetylmorphine/Diamorphine)

        - Apomorphine
        - Semisynthetic morphine derivatives
            - Hydromorphone
            - Oxymorphone
        - Semisynthetic codeine derivatives
            - Hydrocodone
            - Oxycodone
    - → Synthetic
        - Methadone
        - Meperidine/Pethidine
        - Levorphanol
        - Loperamide & Dipehnoxylate
        - Tramadol
        - Fentanyl
            - Alfentanyl
            - Sulfentanyl
        - Pentazocine

Based on pharmacodynamics

- Strong full agonist
    - → Morphine & related drugs
        - Heroin
        - Methadone
        - Hydromorphone
        - Oxymorphone
        - Fentanyl
        - Meperidine
        - Levorphanol
- Mild to moderate full agonist
    - → Codeine & related drugs
        - Hydrocodone
        - Oxycodone
        - Tramadol
- Partial agonist
    - → Pentazocine
    - → Nalbuphine
    - → Butorphanol
    - → Buprenorphine
- Opioid antagonist
    - → Naltrexone
    - → Nalorphine
    - → Naloxone
    - → Nalmefene
    - → Levallorphan

DMARDs

Non-biologic

- Methotrexate
- Anti-malarial
    - → Hydroxychloroquine
    - → Chloroquine

- Gold compounds
  - → Parenteral
    - Aurothiomalate
    - Aurothioglucose
  - → Oral
    - Auranofin
- Sulfasalazine
  - → Sulfapyridine
  - → 5-aminosalicylate/Mesalamine
- Leflunomide

Biologic

- Abatacept
- Rituximab
- Tocilizumab
- Anakinra
- TNF a-blocker
  - → Adalimumab
  - → Infliximab
  - → Etanercept
  - → Certolizumab
  - → Golimumab

GLUCOCORTICOIDS

- Systemic
  - → Methylprednisolone
- Local

RESPIRATORY DRUGS

COLDS

Common colds

Nasal decongestants (Local vasoconstrictors)

- A1 agonist
  - → Phenylephrine
  - → Oxymetazoline
  - → Prophylhexedrine
- A2 agonist
  - → Apraclonidine
  - → Brimonidine
  - → Clonidine

Allergic colds

Nasal decongestant + H1 antihistamines

- Cetirizine
- Loratadine
- Diphenhydramine
- Chlorphenamine

COUGH AND MUCUS PRODUCTION

For productive cough (w/ phlegm)

Mucoregulators

- Bromhexine
- Carbocisteine
- Ambroxol

Mucolytics

- N-acetylcysteine (NAC)

Expectorants

- Guaifenesin (glyceryl guaiacolate)

For dry cough

Antitussives

- Peripherally-acting
  - → Butamirate citrate
- Centrally-acting
  - → Narcotic
    - Codeine
    - Noscapine
  - → Non-narcotic
    - Dextromethorphan

BRONCHOSPASTIC DISORDER (BA & COPD)

Bronchodilators

B2 agonist

- SABA
  - → Salbutamol/Albuterol
  - → Terbutaline
  - → Metaproterenol
  - → Pirbuterol

- LABA
  - → Salmoterol
  - → Formoterol
  - → Bambuterol
  - → Indacaterol

Methylxanthines

- Theophylline
- Aminophylline

Anticholinergics

- Oxytropium
- Tiotropium
- Ipratropium

Mast cell stabilizers

Cromones

- Nedocromil
- Cromolyn sodium/Na cromoglycate

Anti-inflammatory agents

Leukotriene modifiers

- Lipoxygenase (LOX) inhibitor
  - → Zileuton
- LTD4 antagonist (-lukast)
  - → Montelukast
  - → Zafirlukast

Glucocorticosteroids

- Locally-acting inhaled
  - → Budenoside
  - → Beclomethasone
  - → Fluticasone
  - → Triamcinolide
- Systemic – PO
  - → Prednisone, Prednisolone
- Systemic – Parenteral (IV)
  - → Hydrocortisone
  - → Methylprednisolone

GI DRUGS

GERD

- Lifestyle modifications

Antacid and alginates – basic compounds

- $Mg(OH)_2$
- $Al(OH)_2$
- Alginic acid
- $CaCO_3$

H2 receptor antagonist

- Cimetidine – prototype; least potent
- Famotidine – most potent
- Ranitidine
- Nizatidine – almost 100% oral BA

PPIs

- Omeprazole
- Esomeprazole
- Lansoprazole
- Pantoprazole
- Rabeprazole

Prokinetic motility agents

- Domperidone,
- Itopride
- Mosapride

Surgery

PUD

Most frequent anti-H. pylori

- PPIs
- Ranitidine bismuth citrate
- Amoxicillin
- Macrolides (clarithromycin)
- Nitroimidazoles (metronidazole)
- Tetracycline
- Bismuth

NSAID-induced PUD

- Misoprostol
- Rebamipide
- Antacid
- H2RAs
- PPIs

DIARRHEA

- ORS
- BRAT – Banana, Rice, Applesauce, Toast
- u-receptor agonist
  - → Loperamide
  - → Opiates
- Bismuth subsalicylates

- Lactase
- Probiotics (erceflora)
- Ocreotide

CONSTIPATION

Bulk-forming/hydrophilic agents

- Psyllium
- Polycarbophil
- Methylcellulose

Osmotic agents

- Poorly absorbed ions
  - → Magnesium
  - → Sodium
  - → Potassium
- Poorly absorbed disaccharides
  - → Lactulose
  - → Sorbitol
  - → Mannitol
- Glycerin
- Polyethylene-glycol (PEG)

Stimulant laxatives

- Surface acting
  - → Docusates
  - → Bile acids
- Diphenylmethane derivative
  - → Phenolphthalein
  - → Bisacodyl
  - → Sodium picosulfate
- Ricinoleic acid
  - → Castor oil
- Anthraquinones
  - → Senna
  - → Cascara sagrada

Prokinetic agents (neuromuscular agents)

- Cholinergic agonist
  - → Bethanecol
  - → Neostigmine
- Prostaglandin analogues
  - → Cisapride
- Colchicine
- Opiate antagonist
  - → Naloxone
  - → Naltrexone
- 5HT4 agonist
  - → Cisapride
  - → Prucalopride
  - → Tegaserod
- Lubricating agents