

GASTROINTESTINAL AND HEPATOBILIARY SYSTEM DRUGS



LEARNING OUTCOMES

At the end of the lesson, students should be able to:

1. Classify organ system drugs according to their therapeutic uses.
2. Identify commonly available drugs in the pharmaceutical market.
3. Explain the mechanisms of action of the different categories of drugs.
4. Actively participate in class discussions and activities involving the identification and enumeration of commonly available drugs and their therapeutic classifications.

1. Gastrointestinal & hepatobiliary system

- 1a. Antacids, Antireflux Agents & Antiulcerants
- 1b. GIT Regulators, Antiflatulents & Anti-Inflammatories
- 1c. Antispasmodics
- 1d. Antidiarrheals
- 1e. Laxatives & Purgatives
- 1f. Digestives
- 1g. Cholagogues, Cholelitholytics & Hepatic Protectors
- 1h. Anorectal Preparations
- 1i. Antiemetics
- 1j. Other Gastrointestinal Drugs

ANTIULCERANTS

PPI'S	H2BLOC	ANTACIDS
Omeprazole	Ranitidine	Ca Carbonate
- Omepron	- Zantac	-Tums



Gastrointestinal And Hepatobiliary System Drugs

- GIT Regulators...**Motilium**
- Antiemetic...**Plasil**
- Antiflatulents...**Disflatyl**
- Antispasmodics...**Buscopan**
- Anti Diarrheal...**Diatabs**
- Laxatives/Purgatives-**Dulcolax**
- Hepatitis...**Essentiale**
- Anorectal Preparations...**Daflon 500**

GIT = Motil
Eme Pastil

HEPATITIS is ESSENTIAL for ANORECTAL
PREP. by DAFLON of 500

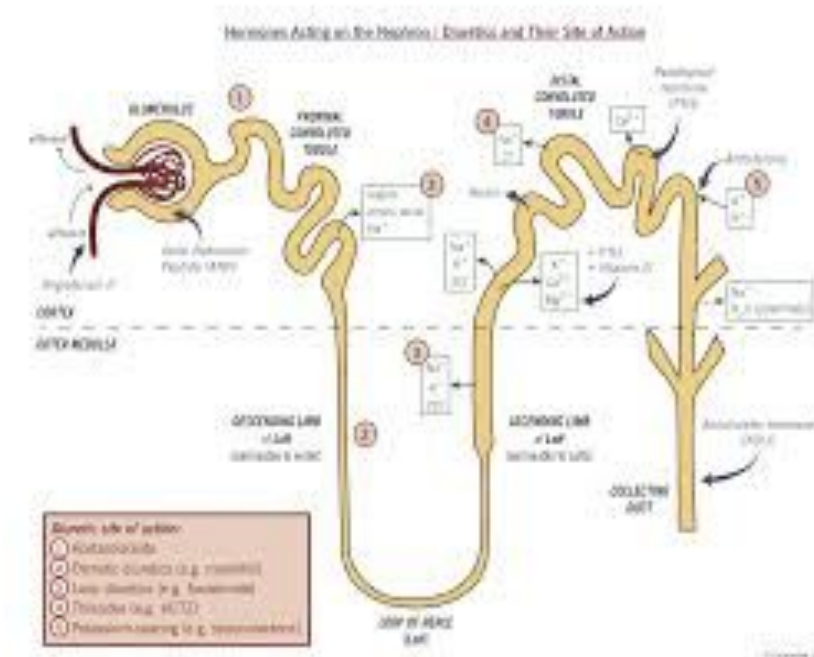


CARDIOVASCULAR AND HEMATOPOIETIC SYSTEM DRUGS



DIURETICS (“WATER PILLS”)

- Drugs that increase the excretion of sodium and water through the kidneys, resulting in increased urine production.
- Help lower blood pressure by reducing blood volume. Some diuretics also lower blood pressure through long-term effects on blood vessels.
- Used to manage hypertension, edema (fluid retention), and heart failure.



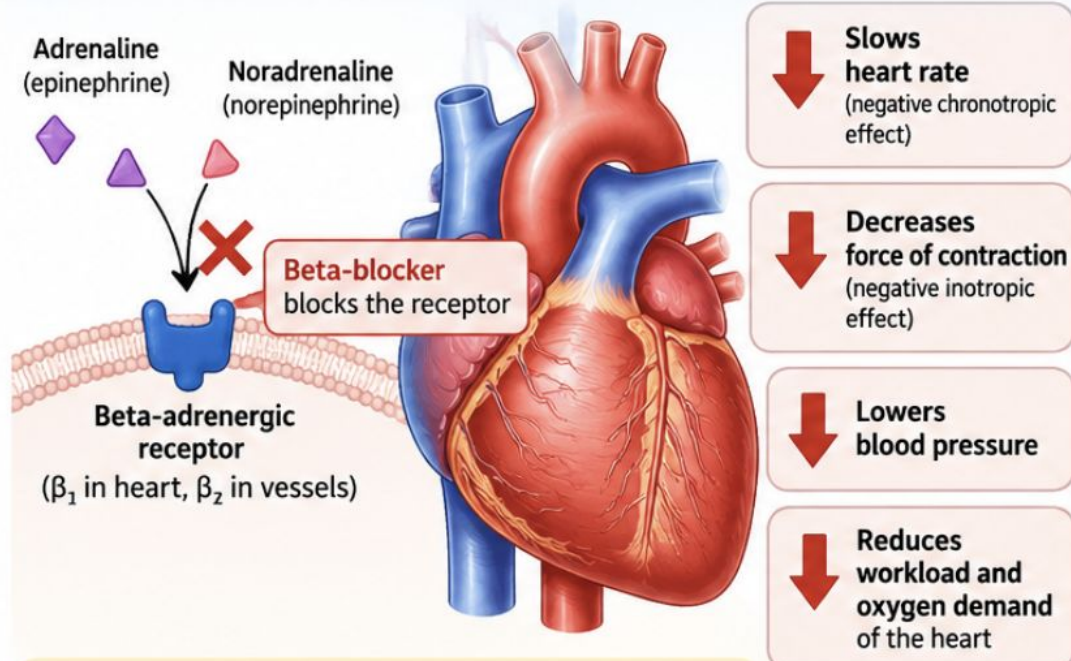
DIURETICS USED FOR HYPERTENSION

Classification	Generic Name	Brand Name
Carbonic Anhydrase Inhibitor	○ Acetazolamide	Diamox
Thiazide-like Diuretic	Chlorthalidone	Thalidone
Thiazide Diuretic	○ Hydrochlorothiazide	HydroDIURIL, Microzide, Esidrix
Thiazide-like Diuretic	Indapamide	Lozol
Loop Diuretic	Bumetanide	Bumex
Loop Diuretic	Ethacrynic Acid	Edecrin
Loop Diuretic	○ Furosemide	Lasix
Potassium-Sparing Diuretic	○ Spironolactone	Aldactone
Loop Diuretic	Torsemide	Demadex
Potassium-Sparing Diuretic	Triamterene	Dyrenium



BETA-BLOCKERS

Block the effects of **adrenaline (epinephrine)** and **noradrenaline (norepinephrine)** on **beta-adrenergic receptors**, slow the heart rate, and reduce stress on the heart and the arteries.



Key Effects

- Slow the heart rate
- Reduce the force of heart contractions
- Lower blood pressure
- Decrease stress on the heart and arteries

BETA-BLOCKERS

Common Drugs and Uses

Generic Name	Brand Name (Examples)	Common Uses
Atenolol	Tenormin	Hypertension, angina, arrhythmias
Metoprolol	Betaloc, Lopressor, Toprol XL	Hypertension, angina, arrhythmias, heart failure
Bisoprolol	Concor	Hypertension, angina, heart failure
Propranolol	Inderal	Hypertension, angina, arrhythmias, migraine prophylaxis, thyrotoxicosis symptoms
Carvedilol	Dilatrend	Hypertension, heart failure, post-myocardial infarction

ATEN ku pung HAA
METOnG PRO = metung pa a HF + A
Bisopro = Bisa ko pa HF
PROPA = migraine
CARVED = post-myocardial

Important Notes

- Beta-blockers are **not usually first-line treatment** for uncomplicated hypertension **unless there is another indication** (e.g., angina, arrhythmias, heart failure, post-MI).
- Different beta-blockers have varying selectivity, duration of action, and additional properties (e.g., alpha-blocking activity in carvedilol).

BETA-BLOCKERS

Atenolol (Tenormin)



Bisoprolol (Concor)



Carvedilol (Dilatrend)



Metoprolol (Neobloc)



Nadolol (Corgard)

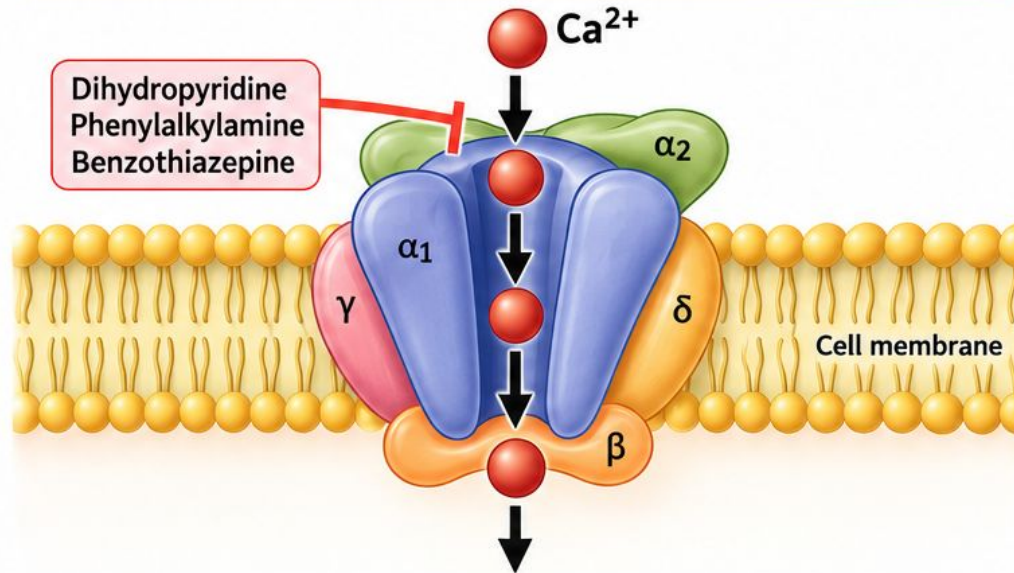


Propranolol (Inderal)



CALCIUM CHANNEL BLOCKERS

- Can reduce blood pressure by **dilating the arteries** and, in some cases, **reducing the force of the heart's contractions**.



MECHANISM OF ACTION

- Block voltage-gated L-type calcium channels in vascular smooth muscle and cardiac muscle.
- Decrease calcium influx into cells.
- Result: vasodilation of peripheral arteries and, in some cases, reduced force of cardiac contractions.

THERAPEUTIC USES

- Hypertension
- Angina pectoris
- Certain arrhythmias (e.g., supraventricular tachycardia)
- Raynaud's phenomenon

TYPES

- Dihydropyridines:** Amlodipine, Felodipine, Isradipine, Nicardipine, Nifedipine
- Non-dihydropyridines:** Verapamil, Diltiazem
- Dihydropyridines mainly cause vasodilation.
- Non-dihydropyridines also reduce heart rate and cardiac contractility.

EXAMPLES OF CALCIUM CHANNEL BLOCKERS (Common Brands in the Philippine Market)

Amlodipine (Norvasc)



Felodipine (Plendil)



Isradipine (DynaCirc)



Nicardipine (Cardipene)



Nifedipine (Adalat)



Verapamil HCl (Isoptin)

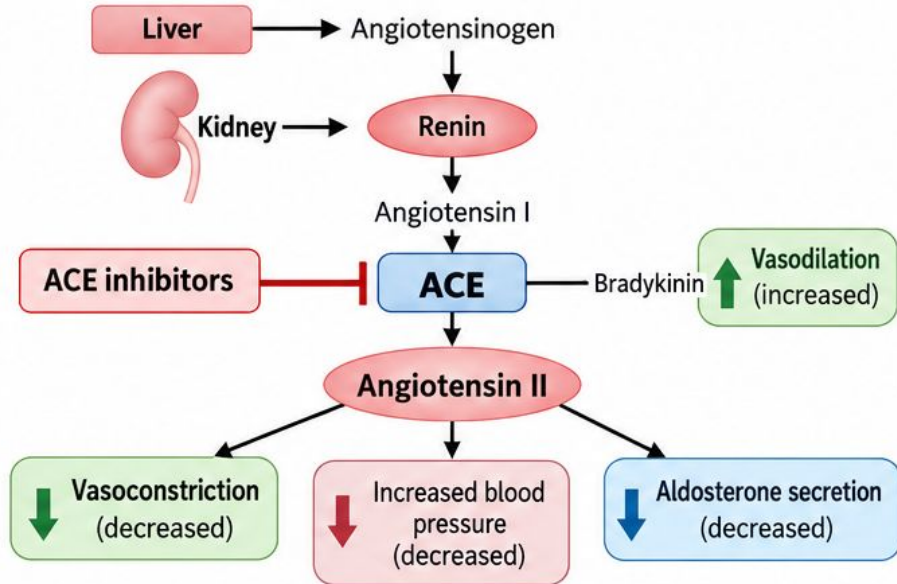


Diltiazem (Dilzem)



ANGIOTENSIN CONVERTING ENZYME (ACE) INHIBITORS

- Can lower blood pressure by **dilating the arteries**.



MECHANISM OF ACTION

- Inhibit angiotensin-converting enzyme (ACE).
- Decrease conversion of angiotensin I to angiotensin II.
- Decrease aldosterone secretion.
- Increase bradykinin levels (vasodilator).
- Result:** vasodilation of peripheral arteries, lower blood pressure, and reduced cardiac workload.

THERAPEUTIC USES

- Hypertension
- Heart failure (improves survival)
- Post-myocardial infarction (reduces mortality)
- Diabetic nephropathy (slow progression of kidney disease)

KEY POINTS

- Dilate arteries → lower blood pressure
- Also reduce aldosterone → less sodium and water retention.
- Increase bradykinin → contributes to vasodilation but may cause a dry cough (common side effect).
- Generally well-tolerated and beneficial in heart failure, post-MI, and diabetic kidney disease.

EXAMPLES OF ACE INHIBITORS (Common Brands in the Philippine Market)

Captopril (Capoten)



Enalapril (Renitec)



Fosinopril (Monopril)



Lisinopril (Zestril)



Moexipril (Univasc)



Quinapril (Accupril)



Ramipril (Altace)

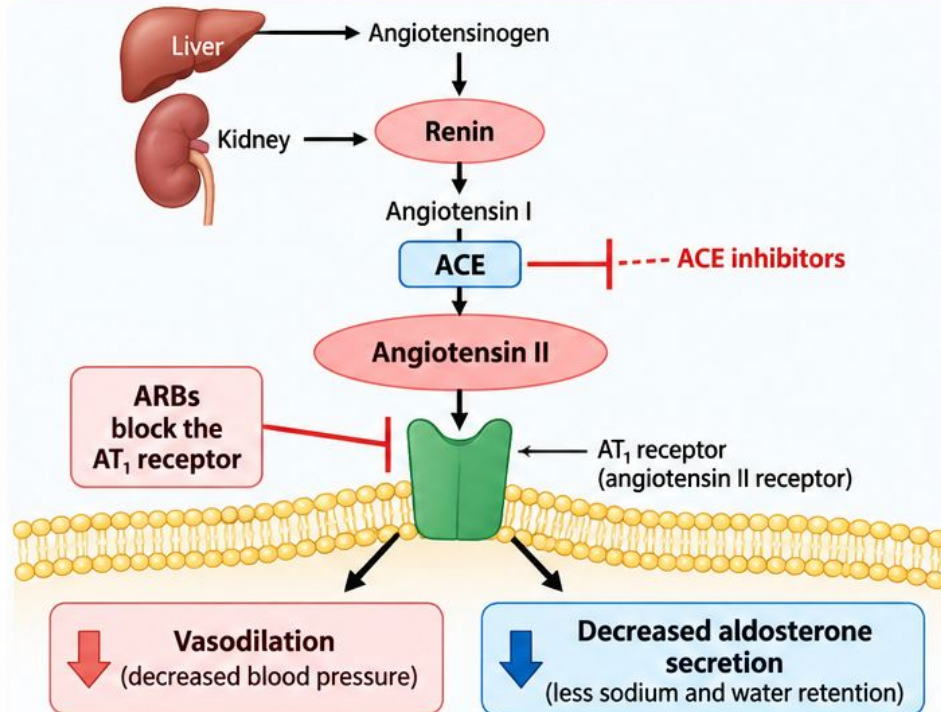


Trandolapril (Mavik)



ANGIOTENSIN II RECEPTOR BLOCKERS (ARBs)

- Can lower blood pressure by **dilating the arteries**.



EXAMPLES OF ARBs (Common Brands in the Philippine Market)

Candesartan (Blopress)



Irbesartan (Aprovel)



Losartan (Cozaar)



Telmisartan (Micardis)



Valsartan (Diovan)



MECHANISM OF ACTION

- Selectively block the angiotensin II type 1 (AT₁) receptors.
- Prevent the effects of angiotensin II (vasoconstriction and aldosterone release).
- **Result:** dilation of arteries, lower blood pressure, and reduced sodium and water retention.

THERAPEUTIC USES

- Hypertension
- Heart failure (alternative to ACE inhibitors)
- Diabetic nephropathy (slows progression of kidney disease)
- Reduction of cardiovascular risk (e.g., in patients with left ventricular hypertrophy)

KEY POINTS

- ARBs block the effects of angiotensin II at the AT₁ receptor, leading to vasodilation and lower blood pressure.
- Do not increase bradykinin levels (lower risk of dry cough compared to ACE inhibitors).
- Generally well-tolerated.
- Contraindicated during pregnancy.

OTHER COMMONLY USED HYPERTENSION LOWERING DRUGS

Clonidine (Catapres)



Doxazosin (Cardura)



Guanabenz (Wytensin)



Guanfacine (Tenex)



Hydralazine hydrochloride (Apresoline)



Methyldopa (Aldomet)



Prazosin (Minipress)



Reserpine (Serpasil)



Terazosin (Hytrin)



MECHANISM OF ACTION

- **Clonidine** – central α_2 -agonist; decreases sympathetic outflow from the brain.
- **Doxazosin / Terazosin / Prazosin** – α_1 -blockers; cause vasodilation.
- **Guanabenz / Guanfacine** – central α_2 -agonists; reduce sympathetic activity.
- **Hydralazine** – direct arteriolar vasodilator.
- **Methyldopa** – central α_2 -agonist; decreases sympathetic outflow.
- **Reserpine** – depletes norepinephrine from nerve terminals.

THERAPEUTIC USES

- Hypertension
- Adjunct therapy (often used in combination with other antihypertensives)
- **Prazosin, terazosin, doxazosin** – also used for benign prostatic hyperplasia (BPH)
- **Methyldopa** – commonly used in pregnancy-induced hypertension

KEY POINTS

- Used when first-line agents (e.g., ACE inhibitors, ARBs, calcium channel blockers, or thiazide diuretics) are not suitable or sufficient.
- May be used as add-on therapy in resistant hypertension.
- Monitor for adverse effects such as orthostatic hypotension (especially with α_1 -blockers), sedation (central acting agents), and fluid retention (hydralazine).
- Drug selection depends on the patient's comorbidities, tolerance, and specific clinical situation.

ANTICOAGULANTS, FIBRINOLYTICS, ANTIPLATELET DRUGS

ANTICOAGULANTS

Prevent the **formation or extension of blood clots.**

Heparin
(Heparin sodium)



Enoxaparin
(Clexane)



Fondaparinux
(Arixtra)



Warfarin
(Coumadin)



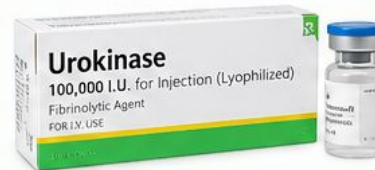
KEY POINTS – ANTICOAGULANTS

- Inhibit the formation or extension of blood clots by interfering with the coagulation cascade.
- Used for prevention and treatment of thromboembolic disorders.
- **Examples:** Heparin, Enoxaparin, Fondaparinux, Warfarin.
- Require monitoring (e.g., aPTT for heparin, INR for warfarin).

FIBRINOLYTICS

Dissolve existing blood clots in selected emergency conditions.

Urokinase



Alteplase
(rt-PA)



Streptokinase



Abbokinase®
(Anistreplase)



KEY POINTS – FIBRINOLYTICS

- Dissolve existing blood clots (thrombi) by converting plasminogen to plasmin.
- Used in emergency conditions such as acute myocardial infarction, ischemic stroke, and massive pulmonary embolism.
- **Examples:** Alteplase, Streptokinase, Urokinase, Anistreplase (Abbokinase®).
- **Highest risk:** bleeding (e.g., intracranial hemorrhage).

ANTIPLATELET DRUGS

Prevent **platelets from aggregating and forming blood clots.**

Aspirin
(Acetylsalicylic acid)



Clopidogrel
(Plavix)

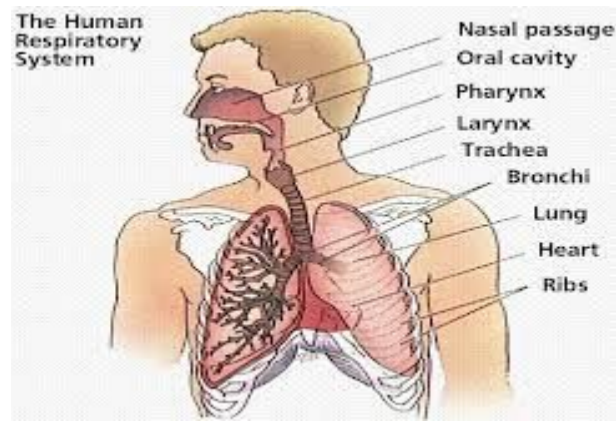


Ticlopidine
(Ticlid)



KEY POINTS – ANTIPLATELET DRUGS

- Prevent platelets from aggregating and forming clots, mainly by inhibiting platelet activation pathways.
- Used for prevention of arterial thrombotic events (e.g., myocardial infarction, stroke, peripheral arterial disease).
- **Examples:** Aspirin, Clopidogrel, Ticlopidine.
- **Main adverse effect:** bleeding (e.g., gastrointestinal bleeding).



RESPIRATORY SYSTEM

- ANTI-ASTHMA DRUGS
- COUGH AND COLD PREPARATIONS

ANTI-ASTHMA DRUGS

(Common Generic and Brand Names)

inflammation in the lungs and airway (blocked)

Aminophylline (AML)



Bambuterol HCl (BAMBEC)



Bromhexine HCl + Orciprenaline (BISOLPENT)



MECHANISM OF ACTION

- **Bronchodilators** (e.g., aminophylline, bambuterol, clenbuterol, doxofylline, fenoterol, salbutamol) relax airway smooth muscles.
- **Corticosteroids** (e.g., budesonide, fluticasone) reduce airway inflammation and hyperresponsiveness.
- **Mucolytic + bronchodilator** combinations (e.g., bromhexine + orciprenaline, guaifenesin + salbutamol) help loosen mucus and open airways.

Budesonide (ASMAVENT UAP)



Clenbuterol HCl (SPIROPENT)



Doxofylline (ANSIMAR)



THERAPEUTIC USES

- Acute relief of asthma symptoms (bronchodilators)
- Long-term control and prevention of asthma attacks (inhaled corticosteroids and long-acting bronchodilators)
- Relief of cough and thick mucus (mucolytic combinations)
- Often used in bronchial asthma and other obstructive airway diseases (e.g., COPD).

Fenoterol (BERODUAL / BERODUAL F UDV)



Fluticasone propionate (FLIXOTIDE)



Formoterol fumarate dihydrate (FORADIL)



KEY POINTS

- Short-acting bronchodilators (e.g., salbutamol, fenoterol) are used for quick relief of acute symptoms.
- Inhaled corticosteroids (e.g., budesonide, fluticasone) are for long-term control and should not be used for acute attacks.
- Combination products (e.g., bromhexine + orciprenaline, guaifenesin + salbutamol) address both bronchospasm and mucus.
- Use the lowest effective dose and correct inhaler technique.
- Monitor for side effects such as tachycardia, tremors (β_2 -agonists), and oral candidiasis (inhaled steroids).

Guaifenesin + Salbutamol (BRONCAIRE EXPECTORANT)



COUGH & COLD MEDICATIONS

(Common Generic and Brand Names)

Acetylcysteine (Fluimucil)



Ambroxol HCl (Ambroxol)



Brompheniramine maleate + Phenylephrine (Dimetapp)



Vitex Negundo (Lagundi) (Plemex)



Guaifenesin + Salbutamol (Asmalin / Broncho)



Oxymetazoline HCl (Drixine)



MECHANISM OF ACTION

- **Acetylcysteine, Ambroxol, Guaifenesin** – mucolytics/expectorants that thin mucus, making it easier to cough out.
- **Brompheniramine maleate** – antihistamine that relieves runny nose, sneezing, and itching.
- **Phenylephrine, Oxymetazoline** – decongestants that constrict blood vessels in the nasal passages, reducing congestion.
- **Salbutamol** – bronchodilator that relaxes airway muscles, easing breathing (often combined with guaifenesin).
- **Vitex negundo (Lagundi)** – herbal medicine used as a cough remedy and may help reduce airway inflammation.

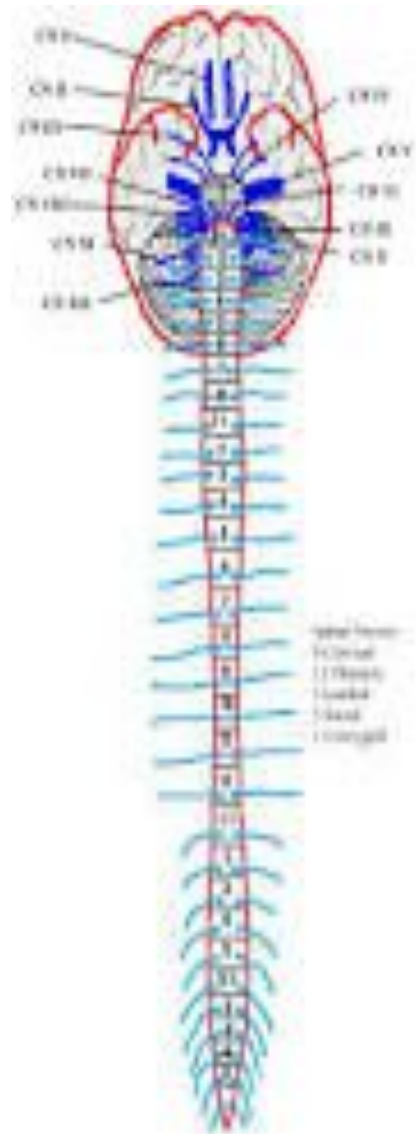
COMMON USES

- Relief of cough with or without phlegm
- Nasal congestion (stuffy nose)
- Runny nose, sneezing, and allergy symptoms
- Supportive relief of symptoms of the common cold
- Adjunct treatment in respiratory infections (e.g., bronchitis)

KEY POINTS / REMINDERS

- Use medicines based on symptoms (cough, phlegm, congestion, allergy).
- Mucolytics and expectorants are for productive (phlegmy) cough.
- Antihistamines and decongestants are for runny nose, sneezing, and nasal congestion.
- Salbutamol-containing products may help in cough with bronchospasm (e.g., in asthmatic patients).
- Oxymetazoline should be used for a short duration (usually $\leq 3-5$ days) to avoid rebound congestion.
- Consult a pharmacist or doctor if symptoms persist, worsen, or are accompanied by fever or difficulty breathing.

COPD - obstructive pulmonary disease



CNS DRUGS

ANXIOLYTICS

(Common Generic and Brand Names)

Alprazolam (Xanor)



Diazepam (Valium)



Hydroxyzine (Iterax)



Bromazepam (Lexotan)



Clorazepate dipotassium (Tranxene)



MECHANISM OF ACTION

- Enhance the effect of gamma-aminobutyric acid (GABA) in the brain by binding to benzodiazepine receptors.
- Increase the frequency of chloride channel opening, leading to neuronal inhibition.
- **Result:** decreased anxiety, sedation, muscle relaxation, and anticonvulsant effects.

THERAPEUTIC USES

- Short-term treatment of anxiety and anxiety disorders.
- Management of panic attacks.
- Adjunct therapy for insomnia (short-term).
- Pre-procedural sedation.
- Muscle relaxation (e.g., in muscle spasms).
- Control of seizures (e.g., diazepam).

KEY POINTS

- Can cause drowsiness, dizziness, and impaired coordination.
- Risk of dependence and withdrawal with long-term use.
- Use the lowest effective dose for the shortest duration possible.
- Avoid alcohol and other CNS depressants.
- Use with caution in the elderly and in patients with liver or respiratory impairment.

HYPNOTICS & SEDATIVES

(Common Generic and Brand Names)

Midazolam (Dormicum)



Estazolam (Esligan Takeda)



Nitrazepam (Mozepam)



Diazepam (Valium)



Dexmedetomidine HCl (Precedex)



MECHANISM OF ACTION

- **Benzodiazepines** (midazolam, estazolam, nitrazepam, diazepam) enhance the inhibitory effect of GABA in the brain by binding to benzodiazepine receptors, producing sedation, anxiolysis, and hypnotic effects.
- **Dexmedetomidine** is a selective α_2 -adrenergic agonist that decreases sympathetic outflow, producing sedation, anxiolysis, and some analgesic effects.

THERAPEUTIC USES

- Short-term treatment of insomnia.
- Pre-procedural and procedural sedation (e.g., midazolam, dexmedetomidine).
- Anxiolysis and sedation in hospitalized patients.
- Management of agitation (selected cases).
- Sedation in intensive care units (e.g., dexmedetomidine).

KEY POINTS / REMINDERS

- Can cause drowsiness, dizziness, and impaired coordination.
- Risk of dependence, tolerance, and withdrawal with prolonged use (especially benzodiazepines).
- Use the lowest effective dose for the shortest duration.
- Avoid alcohol and other central nervous system depressants.
- Dexmedetomidine has minimal respiratory depression compared to benzodiazepines, but it may cause bradycardia and hypotension.
- Use with caution in the elderly and in patients with respiratory or hepatic impairment.

IMPORTANT

- Benzodiazepines are generally recommended for short-term use only.
- Dexmedetomidine is used mainly in hospital settings (e.g., ICU, procedural sedation).
- Product images are illustrative and may not reflect current availability in the Philippine market.

ANTIPSYCHOTIC DRUGS

(Common Generic and Brand Names)

GENERIC NAME	BRAND NAME	CLASSIFICATION
Amisulpride	Solian	Atypical
Aripiprazole	Abilify	Atypical
Chlorpromazine	Largactil / Thorazine	Typical
Clozapine	Leponex	Atypical
Olanzapine	Zyprexa	Atypical
Quetiapine	Seroquel / Quetiapro	Atypical
Risperidone	Risperdal	Atypical
Haloperidol	Haldol	Typical



Solian
(Amisulpride)



Abilify
(Aripiprazole)



Thorazine
(Chlorpromazine)



Leponex
(Clozapine)



Zyprexa
(Olanzapine)



Seroquel
(Quetiapine)

MECHANISM OF ACTION

- Primarily block or modulate dopamine (D_2) receptors.
- Atypical antipsychotics also affect serotonin ($5-HT_2A$) receptors.

THERAPEUTIC USES

- Schizophrenia
- Other psychotic disorders
- Bipolar disorder (selected drugs)
- Acute agitation

KEY POINTS / REMINDERS

- May cause sedation, movement disorders, weight gain, and metabolic changes.
- Clozapine requires regular blood monitoring (risk of severe neutropenia).
- Use under the supervision of a healthcare provider.

ANTICONVULSANTS

(Common Generic and Brand Names)

GENERIC NAME	BRAND NAME	CLASSIFICATION
Phenytoin	Dilantin	Sodium channel blocker
Carbamazepine	Tegretol	Sodium channel blocker
Sodium valproate	Epilim	Broad-spectrum
Levetiracetam	Keppra	SV2A modulator
Lamotrigine	Lamictal	Sodium channel blocker
Topiramate	Topamax	Multiple mechanisms
Phenobarbital	Luminal	Barbiturate
Clonazepam	Rivotril	Benzodiazepine



Dilantin
(Phenytoin)



Tegretol
(Carbamazepine)



Epilim
(Sodium valproate)



Keppra
(Levetiracetam)



Lamictal
(Lamotrigine)



Topamax
(Topiramate)

MECHANISM OF ACTION

- Stabilize neuronal excitability and prevent abnormal electrical discharges in the brain.
- Work via sodium channel blockade, enhanced GABA activity, or modulation of neurotransmitter release (depending on the drug).

THERAPEUTIC USES

- Epilepsy (different types of seizures)
- Prevent seizure recurrence
- Selected uses for neuropathic pain and bipolar disorder (depending on the drug)

KEY POINTS / REMINDERS

- Do not stop abruptly (may trigger seizures).
- Monitor for drug interactions and adverse effects.
- Dose selection depends on seizure type and patient factors.
- Use under the supervision of a healthcare provider.

ANTIDEPRESSANT DRUGS

(Common Generic and Brand Names)

GENERIC NAME	BRAND NAME	CLASSIFICATION
Fluoxetine	Prozac	SSRI
Sertraline	Zoloft	SSRI
Escitalopram	Lexapro	SSRI
Paroxetine	Seroxat	SSRI
Fluvoxamine	Luvox / Voxamine	SSRI
Venlafaxine	Efexor XR	SNRI
Duloxetine	Cymbalta	SNRI
Amitriptyline	Tryptanol	Tricyclic antidepressant
Mirtazapine	Remeron	NaSSA
Bupropion	Wellbutrin	NDRI



Prozac
(Fluoxetine)



Zoloft
(Sertraline)



Lexapro
(Escitalopram)



Efexor XR
(Venlafaxine)



Cymbalta
(Duloxetine)



Tryptanol
(Amitriptyline)

MECHANISM OF ACTION

- Increase or regulate neurotransmitters in the brain (serotonin, norepinephrine, and/or dopamine).
- SSRIs: inhibit serotonin reuptake.
- SNRIs: inhibit serotonin and norepinephrine reuptake. TCAs and others have additional mechanisms.

THERAPEUTIC USES

- Major depressive disorder
- Anxiety disorders (e.g., panic disorder, GAD)
- Obsessive-compulsive disorder
- Certain chronic pain conditions
- Other psychiatric conditions (depending on the drug)

KEY POINTS / REMINDERS

- Full therapeutic effect usually takes several weeks.
- Monitor for adverse effects and worsening mood, especially at the start of treatment.
- Do not stop abruptly (risk of withdrawal symptoms, especially with SSRIs/SNRIs).
- Use under the supervision of a healthcare provider.

Thanks for listening.