

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai



DEPARTMENT OF PHYSICIAN ASSISTANT

COURSE NAME : PHARMACOLOGY

UNIT : CLASSIFICATION OF DRUG ACTING ON NERVES

TOPIC : ANTICONVULSANTS

FACULTY NAME : Ms. SINEKA M

INTRODUCTION (Define)

- Anticonvulsants, also known as **antiepileptic drugs (AEDs)**, are medications used to prevent or treat **seizures**.
- By controlling abnormal electrical activity in the brain.

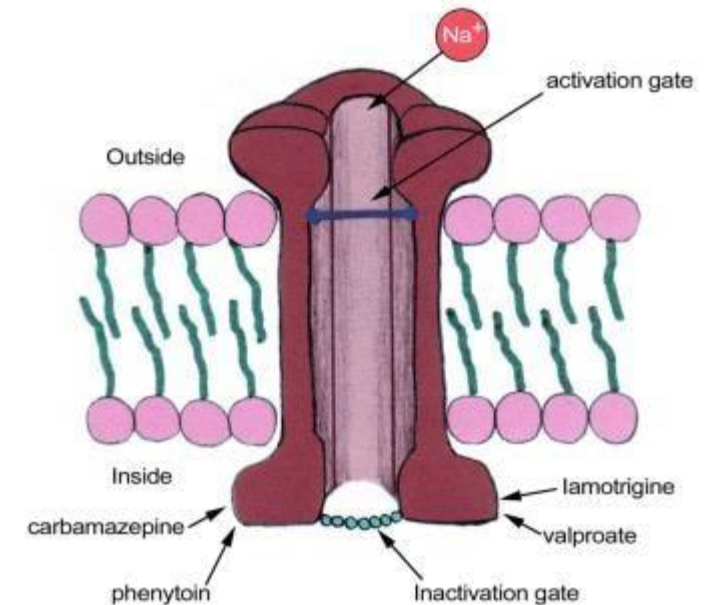


CLASSIFICATION

By Mechanism of Action

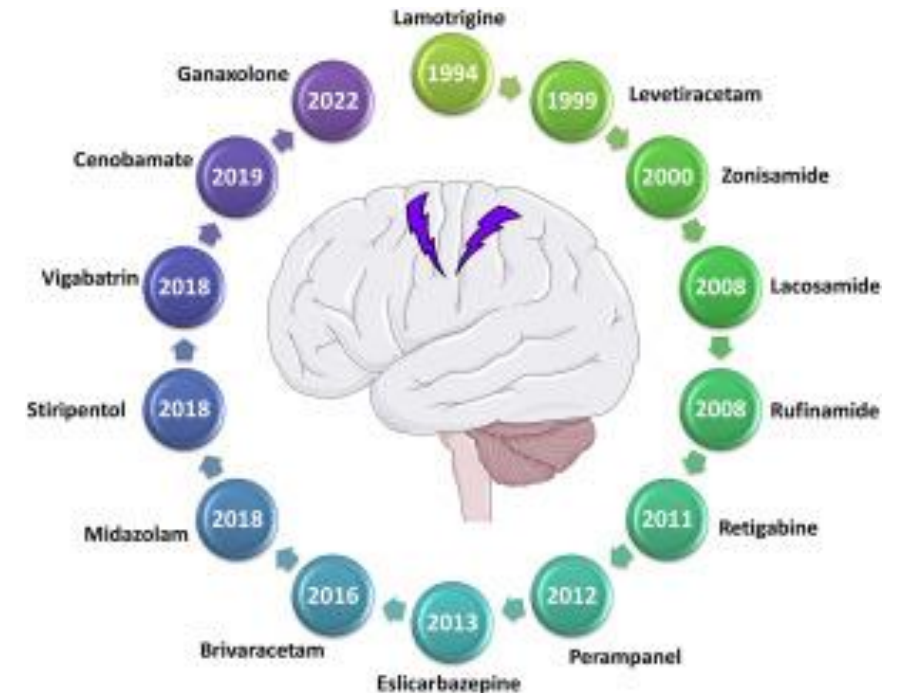
- Sodium Channel Blockers
- Calcium Channel Blockers
- GABA Enhancers

Enhanced Na⁺ Channel Inactivation



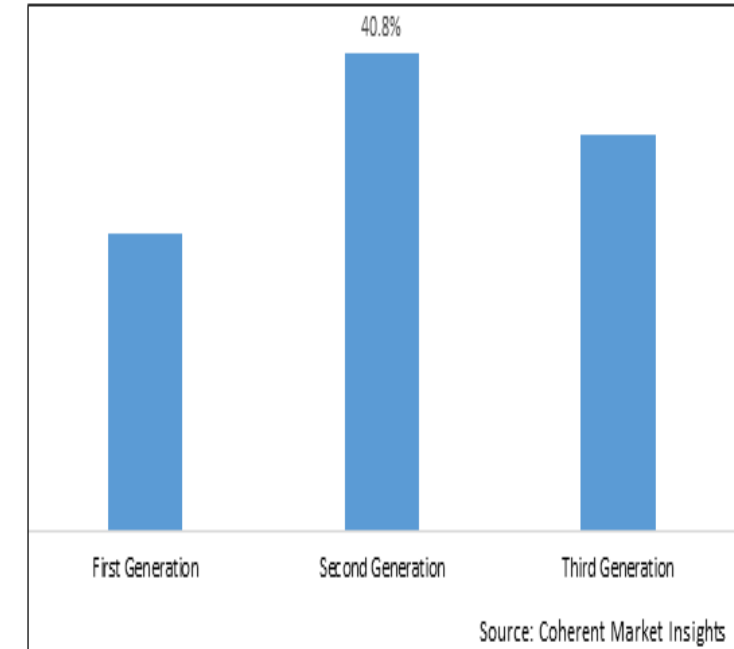
By Spectrum of activity

- Broad-spectrum Anticonvulsants
 - Ex: Levetiracetam, lamotrigine
- Narrow-spectrum Anticonvulsants
 - Ex: Pregabalin, gabapentin



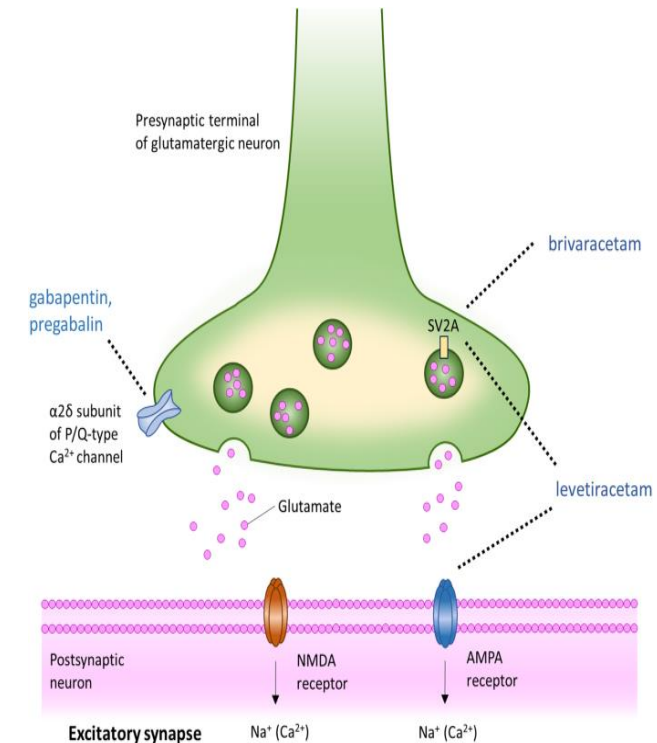
By their chemical structure or generation

- **First-generation AEDs:** Phenobarbital, phenytoin, carbamazepine.
- **Second-generation AEDs:** Felbamate, gabapentin.
- **Third-generation AEDs:** Levetiracetam, pregabalin, lacosamide.



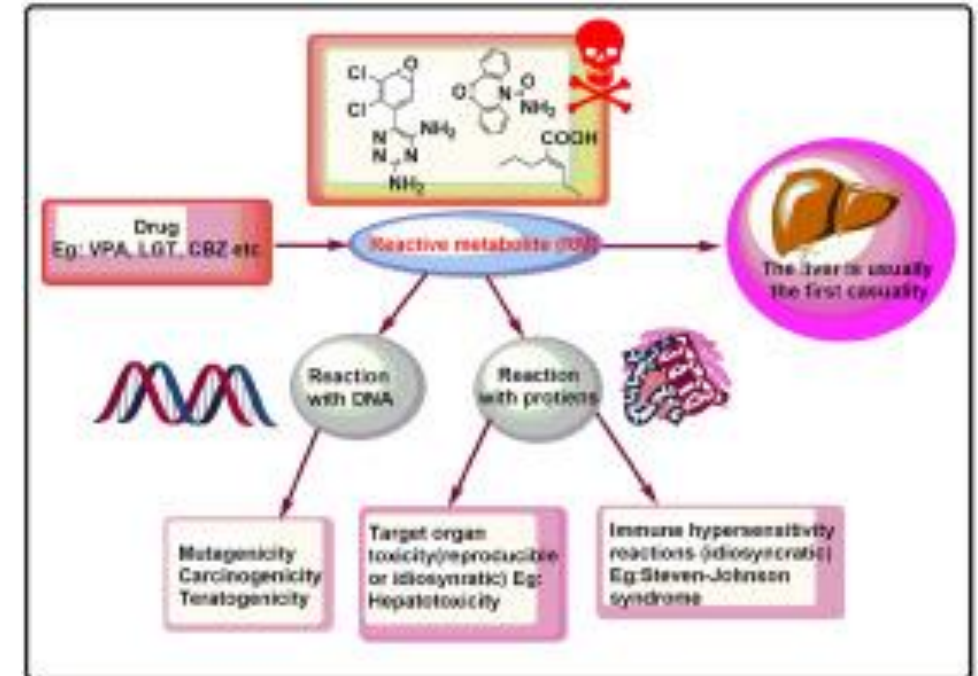
MECHANISM OF ACTION

- Anticonvulsants, or antiepileptic drugs (AEDs), work by **suppressing excessive neuronal activity** and preventing the spread of seizures.
- Primarily through mechanisms like blocking ion channels, enhancing inhibitory neurotransmission (GABA), or inhibiting excitatory neurotransmission (glutamate).



PHARMACODYNAMICS

- Inhibiting sodium and calcium channels
- Enhancing GABAergic activity
- Modulating glutamate release
- Reducing seizure activity.



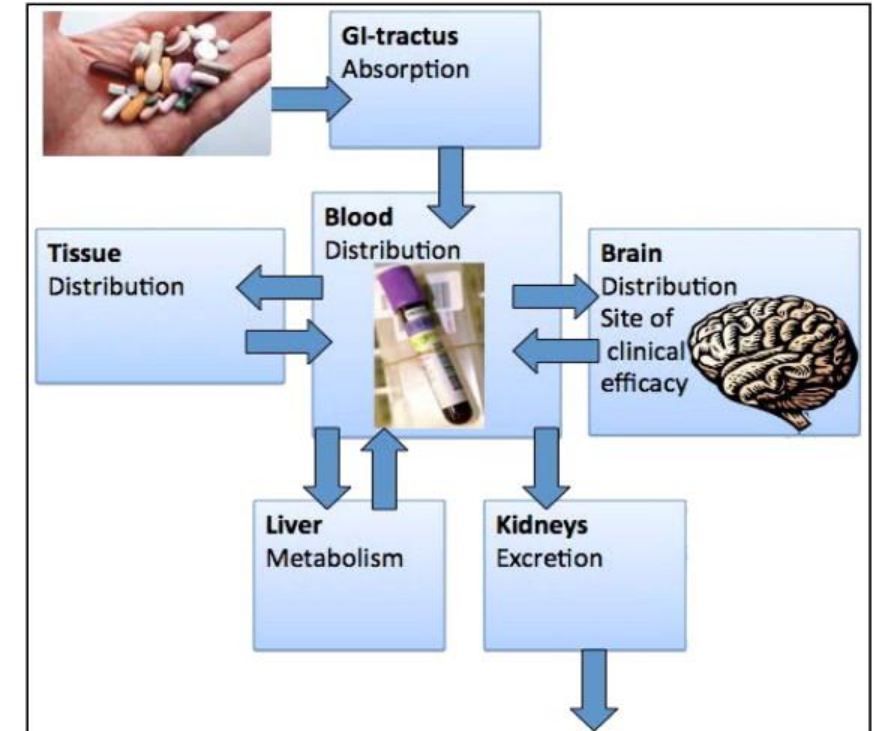
PHARMACOKINETICS

❑ **Absorption:** Gastrointestinal tract

❑ **Distribution:** Tissue distribution

❑ **Metabolism:** Hepatic metabolism

❑ **Elimination:** Renal excretion



INDICATIONS

- ✓ Epilepsy
- ✓ Seizure Disorders
- ✓ Bipolar Disorder
- ✓ Neuropathic Pain
- ✓ Migraine Prophylaxis

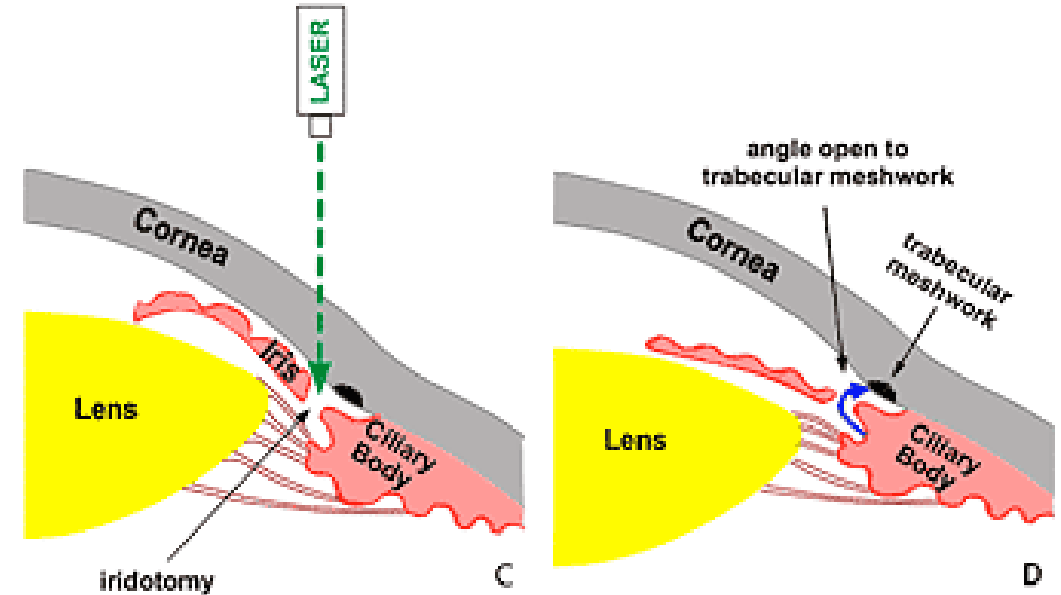


- ✓ Restless Leg Syndrome (RLS)
- ✓ Anxiety and Panic Disorders
- ✓ Dementia
- ✓ Alcohol and Benzodiazepine Withdrawal



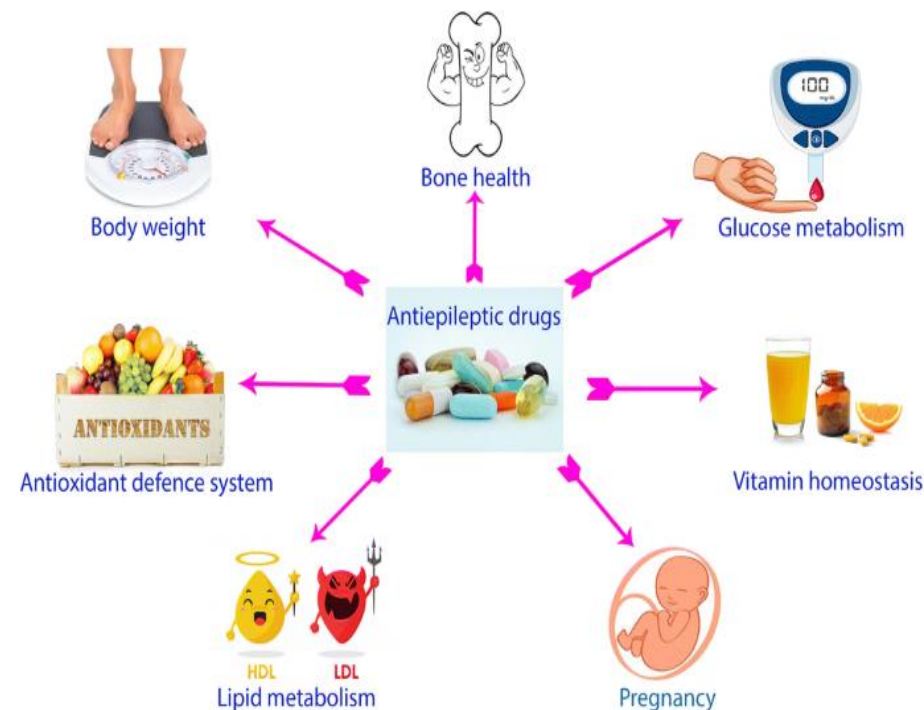
CONTRAINDICATIONS

- ✓ Hypersensitivity
- ✓ Pregnancy and lactation
- ✓ Severe liver or kidney disease
- ✓ Narrow-Angle Glaucoma



ADVERSE EFFECTS

- Liver damage
- Nausea
- Vomiting
- Double vision
- Loss of coordination
- Drowsiness
- Headache

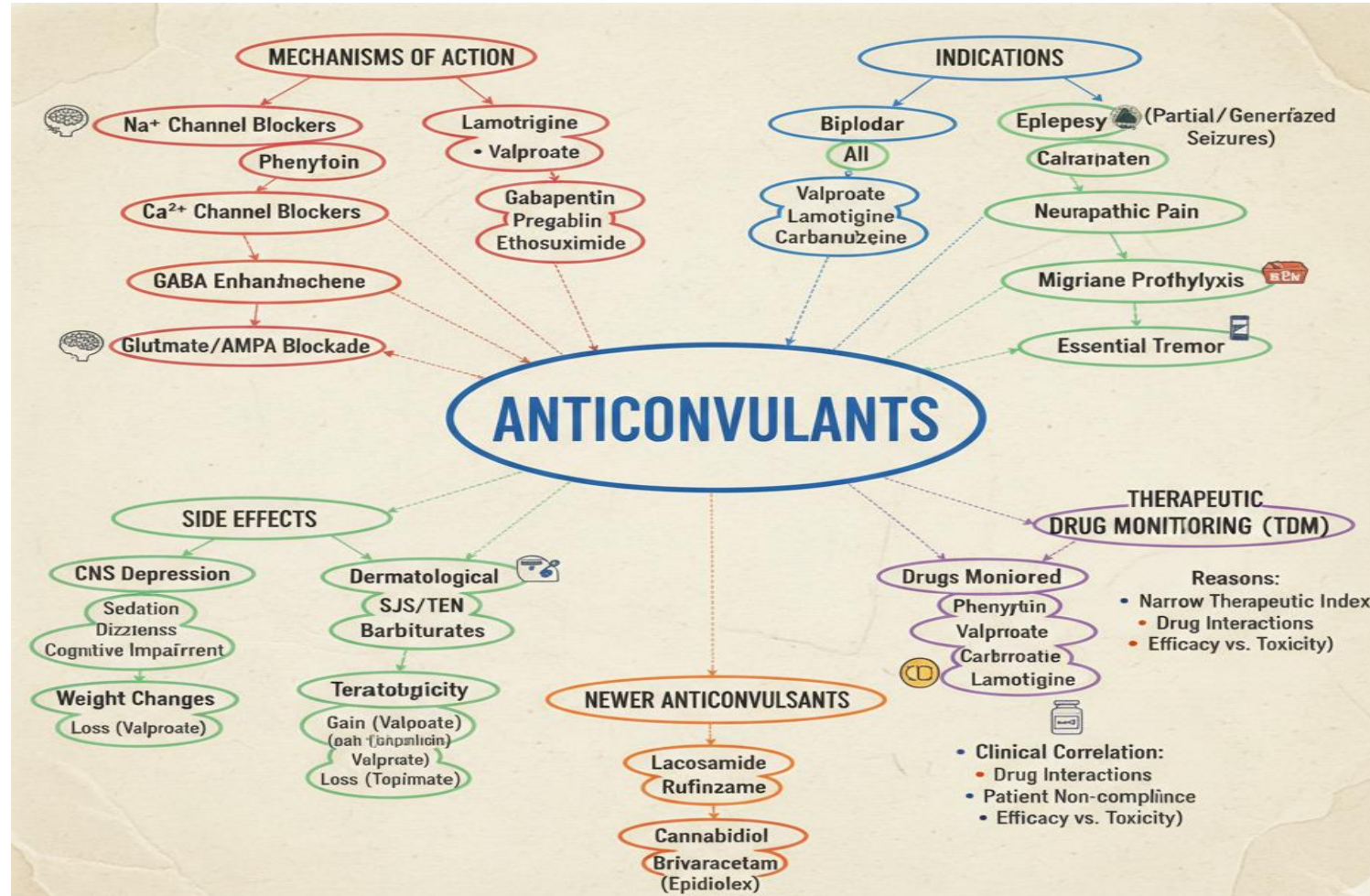


PHYSICIAN ASSISTANT ROLE (Test)

- Seizure frequency and severity Monitoring
- Liver and kidney function Monitoring
- Electrolyte levels Monitoring
- Vital Signs Monitoring



SUMMARY



References

- Medical Pharmacology – Padmaja Udayakumar
- <https://pubmed.ncbi.nlm.nih.gov/8719918/>
- <https://www.pharmacologyeducation.org/anticonvulsant-drugs>
- <https://emedicine.medscape.com/article/1187334-overview>