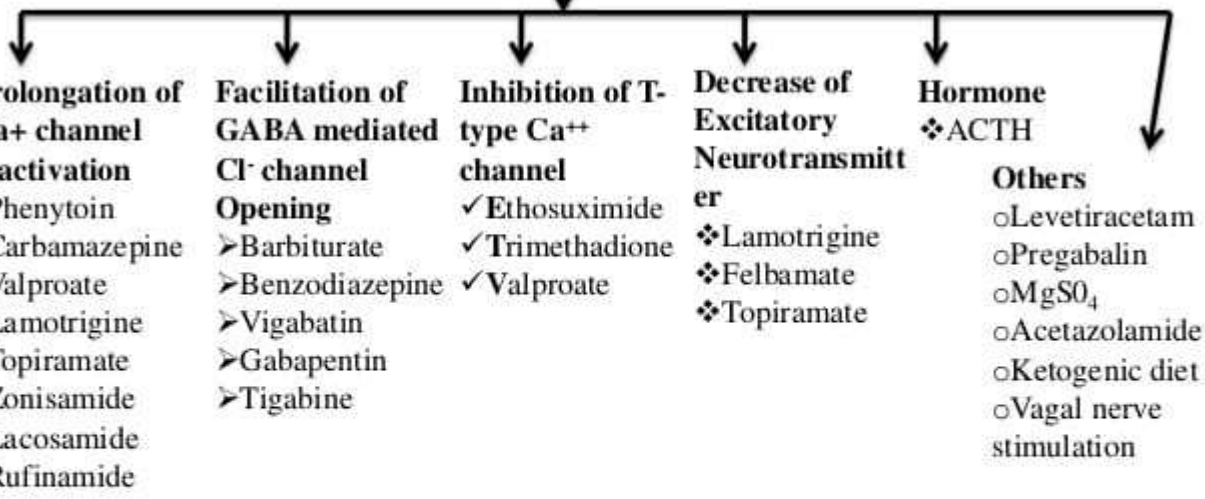
## Mechanism of action of different anti-epileptics




## Chemical Classification:-

1. **Hydantoins:** Phenytoin,fosphenytoin

**2.Barbiturates:** Phenobarbitone, Mephobarbitone

3. **Iminostilbenes:** Carbamazepine,oxcarbazepine

4. **Succinimides:** Ethosuximide

**5. BZDs:** Clonazepam,Diazepam,lorazepam,Clobazam,

5. **Aliphatic carboxylic acid derivative:** Valproic acid

6. **Deoxybarbiturates:** Primidone

8. **Phenyltriazine**:- Lamotrigine, Gabapentin, Vigabatrin

9.**Cyclic GABA analogue:-** Gabapentin, pregabalin

**Newer drugs:-**

Topiramate,Zonisamide,Levetiracetam,Tiagabine,Lacosamide

# Phenytoin

- Hydantoin derivative
- One of the most commonly used drug
- Does not produce significant Drowsiness
- Effective against all types of Partial and Tonic clonic seizures but not absence seizures

**Mechanism:-**

Phenytoin → Bind to voltage dependent $Na^+$ channels (Prolongs the inactivated state) and prevent further entry of $Na^+$ ions into the neuron. (Stabilize neuronal membrane )

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Inhibit the generation of repetitive action potentials

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Therefore, prevent /reduce the spread of seizure discharges

**Other mechanism :-**

- At high conc. ***Phenytoin***

- reduce $Ca^{2+}$ influx(during depolarization) into the neurons

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Suppresses repetitive firing of neurons & NT

- Reduces glutamate levels
- increases GABA responses

- **Pharmacokinetics:-**
- Absorption- slowly after ***oral*** administration
- ***H***ighly bound to plasma proteins
- Metabolism- by ***H***ydroxylation(CYP2C9,CYP2C19) and glucuronide conjugation, Repeated doses cause *enzyme induction*