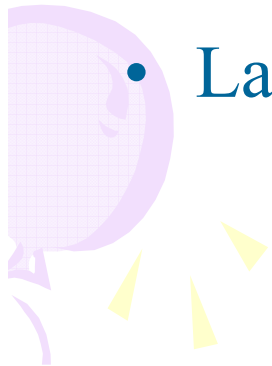




# **CNS Depressants**



- Buspirone
- Carbamazepine
- Diazepam
- Disulfiram
- Ethosuximide
- Flumazeil
- Gabapentin
- Lamotrigine



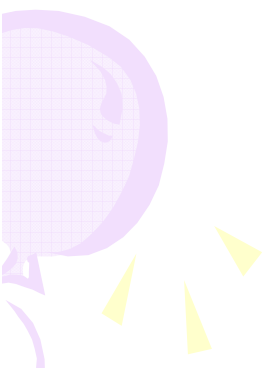
- Lorazepam
- Phenobarbital
- Phenytoin
- Topiramate
- Valproate
- Zolpidem

# Busprione

- Antianxiety
- **5-HT<sub>1A</sub> partial agonist**
- **Activates presynaptic 5-HT<sub>1A</sub> receptors in dorsal raphe nucleus**
  - ↓ firing serotonergic neurons
  - Generalized anxiety disorder
  - NO
    - Drug dependence
    - Significant sedation
    - Muscle relaxation
    - Anticonvulsant effects
- Dizziness
- Drowsiness
- Fatigue
- HA
- Excitement
- Nervousness
- Blurred vision
- Tachycardia
- N
- Rash
- Myalgia
- Sweating
- ↑ levels by
  - Erythromycin
  - Itraconazole
  - Grapefruit juice



# Carbamazepine

- Anticonvulsant
  - **Neuronal Na channel blocker**
  - **Blocks Na channels in CNS**
    - ↓ firing of ectopic foci & spread of epileptic seizures
    - Partial seizures & generalized tonic-clonic seizures
    - Bipolar disorders
    - Trigeminal neuralgia
    - Neuropathic pain
  - **Ataxia**
  - Drowsiness
  - Blurred vision
  - *Agranulocytosis*
  - *Aplastic anemia*
  - *Thrombocytopenia*
  - Induces its own metabolism
- 
- 

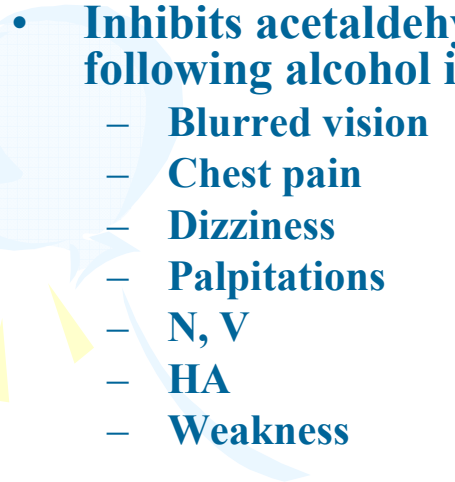
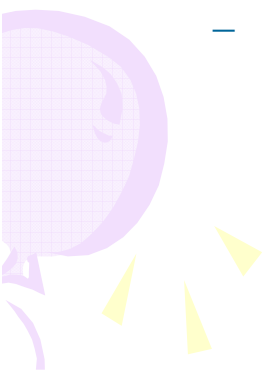


# Diazepam

- Antianxiety
- **Benzodiazepine**
- **Binds  $\omega$  receptors on GABA operated Cl ion channel**
  - $\uparrow$  channel affinity for GABA & frequency of channel opening
  - Potentiates inhibitory effects of GABA
  - Anxiety
  - Status epilepticus
  - Muscle spasm
  - Alcohol w/drawal
  - Anterograde amnesia
  - *Long-lasting active metabolites*
- Drowsiness
- Lethargy
- Physical/psychological dependence
- Tolerance



# Disulfiram

- Alcohol abuse Tx
  - Acetaldehyde dehydrogenase inhibitor
  - Drowsiness
  - **Inhibits acetaldehyde degradation following alcohol ingestion**
    - Blurred vision
    - Chest pain
    - Dizziness
    - Palpitations
    - N, V
    - HA
    - Weakness
    - Reinforcement of alcohol abstinence
- 
- 



# Ethosuximide

- Anticonvulsant

- **Succimide**



- **Binds T-type Ca channels in thalamic neurons**

- **Suppresses nerve transmissions to motor cortex**

- Generalized absence seizures

- Petit mal epilepsy



- Dizziness


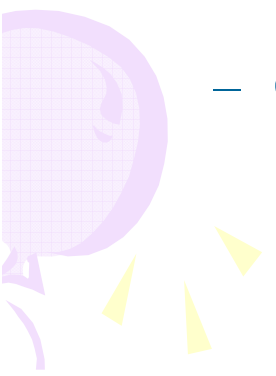
- Drowsiness

- Gastric distress

- N



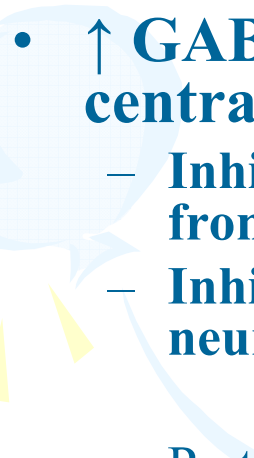
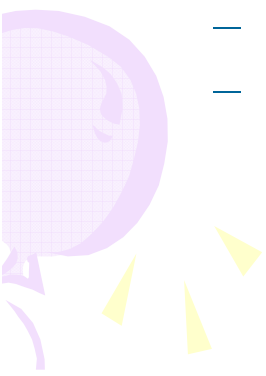
# Flumazenil

- Antidote
  - **Benzodiazepine receptor antagonist**
  - **Blocks benzodiazepine receptors**
    - Seizures
    - Dizziness
    - Emotional lability
    - Counteract adverse effects of benzodiazepines
      - Respiratory depression d/t IV OD
    - CI in status epilepticus
- 
- 






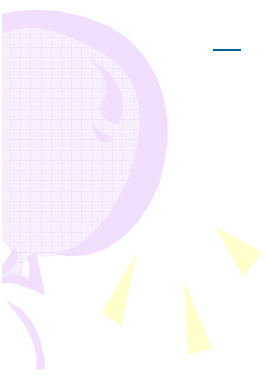
# Gabapentin

- Anticonvulsant
  - **GABA analogue**
  - **↑ GABA release from central neurons**
    - Inhibits neuronal discharges from seizure foci
    - Inhibits pain neurotransmission
  - Partial seizures
  - Chronic pain
  - Migraine prophylaxis
  - Ataxia
  - Dizziness
  - Drowsiness
  - Nystagmus
  - Tremor
- 
- 



# Lamotrigine

- Anticonvulsant
- **Phenytriazine**

- 
- **Blocks voltage-sensitive Na channels**
    - **Release of glutamate**
    - Prevents spread of seizure foci discharges
  - Adjunct/monotherapy for partial seizures in adults
- 

- **Skin rash in 1<sup>st</sup> 8 wk of Tx**
  - Can progress to Stevens-Johnson syn
- Ataxia
- Dizziness
- Drowsiness
- **Photosensitivity**
- ↓ *metabolism* & ↑ *ADR w/ valproate*



# Lorazepam

- Sedative-hypnotic, anxiolytic
- **Benzodiazepine**
- **Binds benzodiazepine  $\omega$  receptors on GABA operate Cl ion channel**
  - **$\uparrow$  channel affinity for GABA & frequency of channel opening**
  - **Potentiates inhibitory effects of GABA**
  - Anxiety
  - Insomnia
  - Preoperative sedation
  - Light anesthesia
  - Anterograde amnesia
  - *Flumazenil used to counteract severe OD*
- Dizziness
- Drowsiness
- **Apnea & cardiac arrest w/ rapid IV admin**
- Additive depression w/ alcohol & other depressants



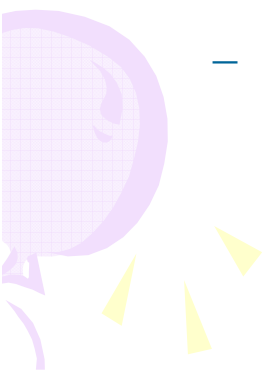
# Phenobarbital

- Sedative-hypnotic, anticonvulsant
- **Barbiturate**

- **Binds GABA operated Cl ion channel increasing duration of channel opening**
  - **↑ Cl influx in absence of GABA**

- Tonic-clonic & partial seizures
- Febrile seizures in children
- Preoperative sedation
- Short-term hypnotic

- ↑ folate requirement during long-term Tx

- Drowsiness
  - Lethargy
  - Delirium
  - Hangover
  - Physical & psychological dependence
  
  - Induces CYP P450 ↑ metabolism of drugs
- 



# Phenytoin

- Anticonvulsant
- **Hydantoin**
- **Blocks voltage-sensitive Na channels**
  - Release glutamate
  - Prevents spread of seizure foci discharges
- Partial seizures
- Generalized tonic-clone seizures
- Status epilepticus following IV diazepam
- Zero-order @ high doses
- Fosphenytoin for IV use
- Ataxia
- **Diplopia**
- **Nystagmus**
- Gingival hyperplasia



# Topiramate

- Anticonvulsant
- **Monosaccharide derivative**
- **Block voltage-sensitive Na channels**
  - **Augments GABA activation of GABA receptors**
    - **Blocks glutamate receptors**
  - Partial & tonic-clonic seizures
  - Decrease dose in pts w/ renal impairment
- Ataxia
- Dizziness
- Drowsiness
- Fatigue
- **Impaired concentration & memory**
- **Psychomotor slowing**
- **Speech problems**
- Diplopia
- Nystagmus



# Valproate

- Anticonvulsant
- **Branched-chain FA**
- **↑ GABA levels by ↑ release or ↓ metabolism or reuptake**
  - **Reduced Na dependent action potentials**
  - Simple & complex absence seizures
  - Complex partial seizures
  - Tonic-clonic seizures
  - Myoclonic seizures
  - Migraine prevention
  - Manic phase of bipolar
- Indigestion
- N, V
- Dizziness
- Sedation
- Hepatotoxicity

A decorative graphic on the left side of the slide features three balloons in green, blue, and purple, each with yellow triangular rays emanating from it. The balloons are connected by thin, curved lines.

# Zolpidem

- Non-benzodiazepine hypnotic
- **Imidazopyridine**
- **Activates  $\omega$  BZBP receptors on GABA operated Cl ion channel**
  - **$\uparrow$  channel affinity for GABA & frequency of channel opening**
    - **Neuronal hyperpolarization**
  - **Insomnia**