



Nervous System Pharmacology: Essential Medications

Welcome to this comprehensive guide on key medications affecting the nervous system. This presentation covers ten critical drug classes that every healthcare professional should understand thoroughly. Each card provides essential information about indications, mechanisms of action, nursing considerations, patient education, and important drug interactions.

We've included helpful mnemonics to aid in memorization of these important medications. Let's explore these crucial pharmacological agents that impact neurological and psychiatric conditions.

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Benzodiazepines: Anxiety & Seizure Management

Indications

Anxiety, seizures, insomnia

Mode of Action

Enhances the effect of GABA, a calming neurotransmitter, by binding to GABA receptors

Nursing Care

Monitor for signs of sedation and respiratory depression

Patient Teaching

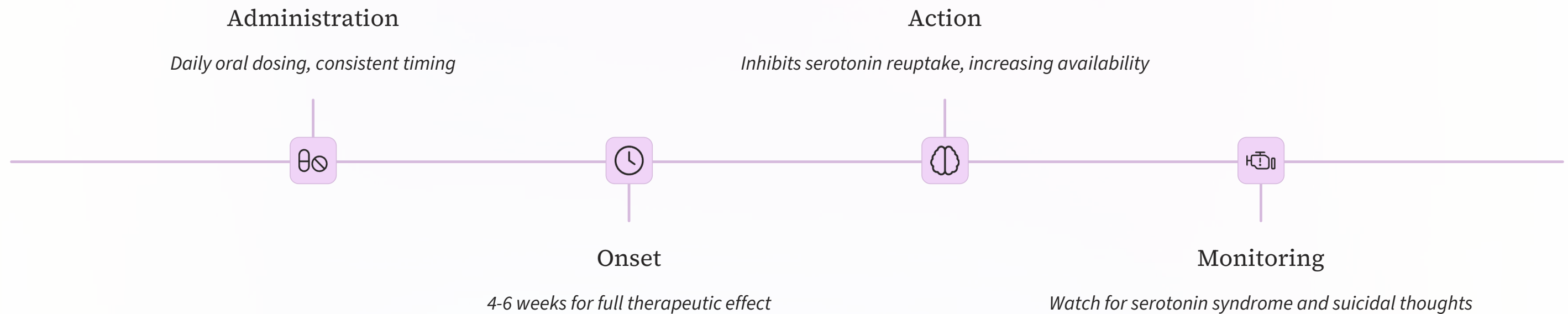
Avoid alcohol; do not stop abruptly to avoid withdrawal symptoms

*Lorazepam and other benzodiazepines work by enhancing the inhibitory effects of GABA in the central nervous system. This produces anxiolytic, sedative, and anticonvulsant effects. Remember the mnemonic: "**Let's Relax Anxiety with Lorazepam**" (LRA).*

These medications can cause significant CNS depression when combined with alcohol, opioids, or other sedatives, requiring careful monitoring and patient education.

SSRI mechanism

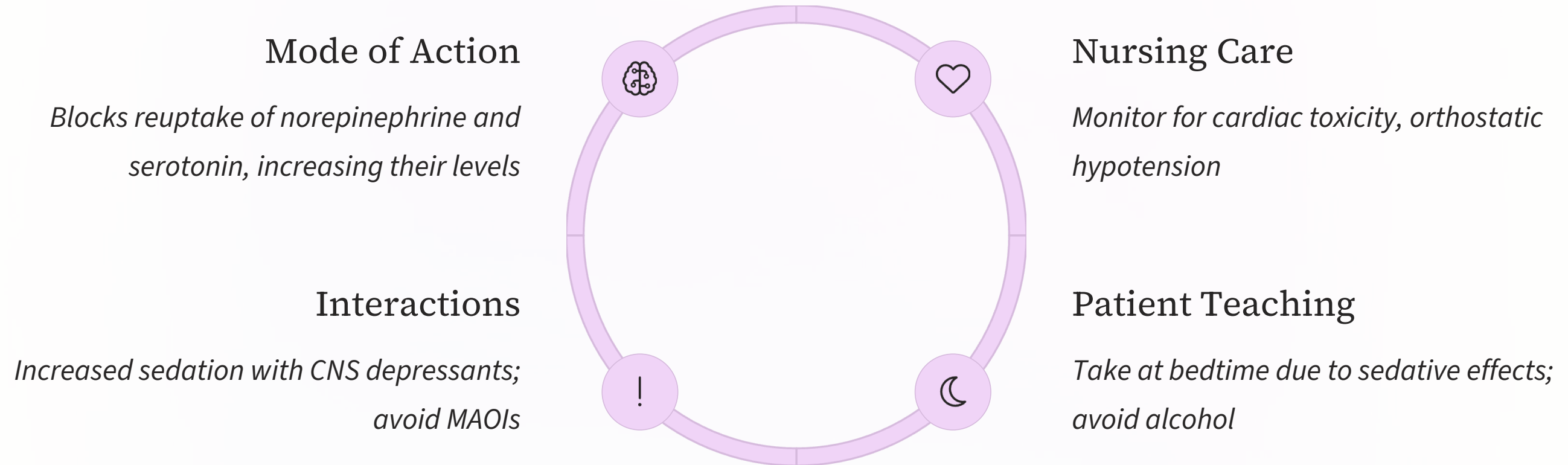
SSRIs: First-Line Antidepressants



Fluoxetine and other SSRIs are indicated for depression, anxiety, and OCD. They work by selectively blocking serotonin reuptake in the brain, increasing serotonin levels at synapses.
Remember: "**Fluoxetine Fights Feelings of Sadness**" (FFS).

Patient teaching is crucial as these medications require several weeks for full effect and should never be discontinued abruptly. They can interact with MAOIs and St. John's Wort, increasing the risk of serotonin syndrome.

Tricyclic Antidepressants: Dual-Action Relief



*Amitriptyline and other TCAs are effective for depression and neuropathic pain. Their mechanism involves blocking the reuptake of both norepinephrine and serotonin. Remember the mnemonic: "**Amitriptyline Alleviates Mood Troubles**" (AAMT).*

Due to their sedative properties, TCAs are typically administered at bedtime. They require careful cardiac monitoring due to potential toxicity and can cause dangerous interactions with MAOIs.

Haloperidol

Dopamine Receptor Blockade



Antipsychotics: Managing Psychotic Symptoms



Mechanism

Blocks dopamine receptors in the brain, reducing psychotic symptoms



Monitoring

Watch for extrapyramidal symptoms (EPS), tardive dyskinesia, and neuroleptic malignant syndrome (NMS)



Precautions

Avoid alcohol and driving; report muscle stiffness or spasms

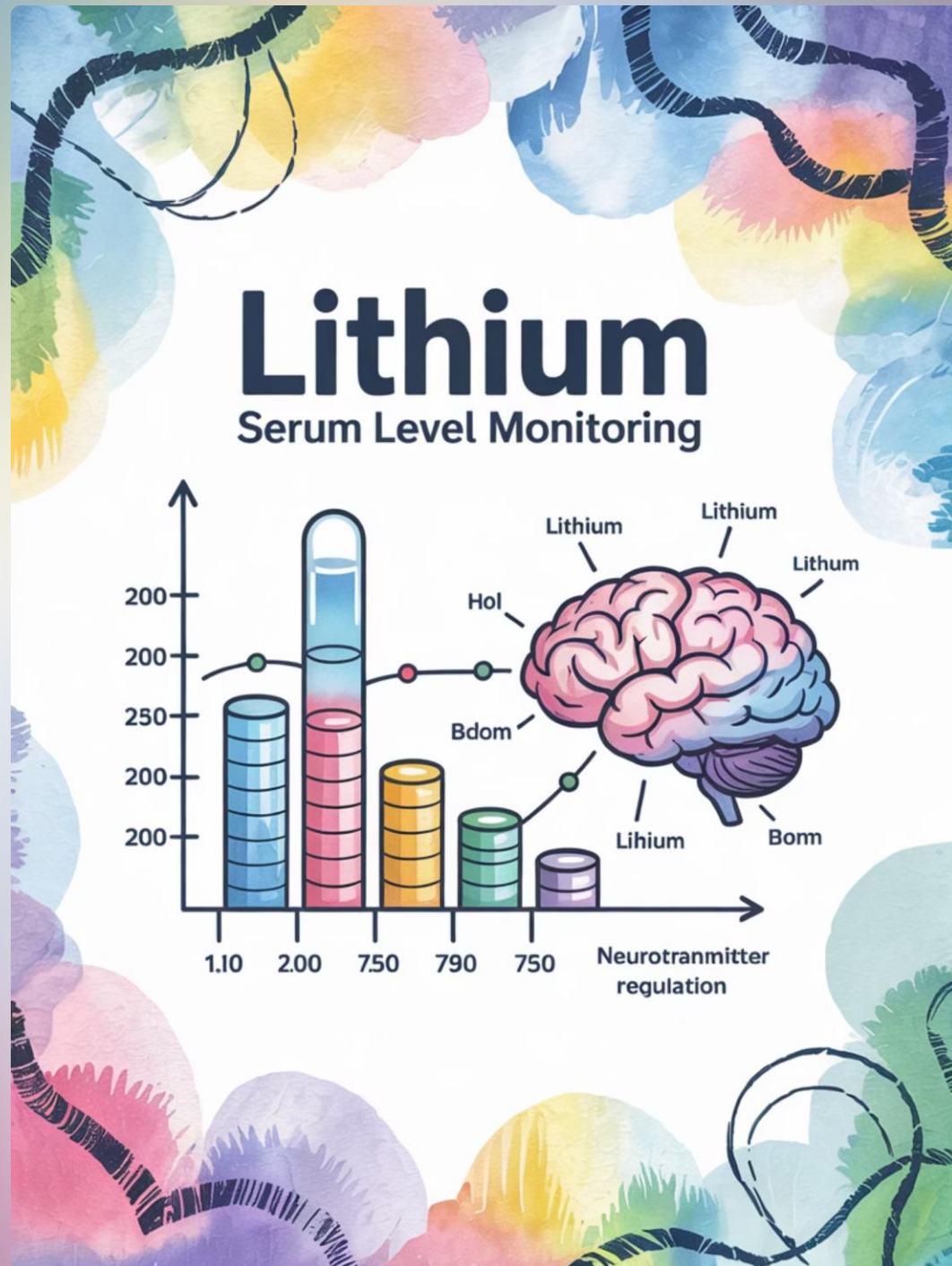


Interactions

Increased sedation with CNS depressants

Haloperidol and other antipsychotics are indicated for schizophrenia and acute psychosis. They primarily work by blocking dopamine receptors. Remember: "Haloperidol Helps Hallucinations Halt" (HHHH).

Nursing care focuses on monitoring for serious side effects like extrapyramidal symptoms and neuroleptic malignant syndrome. Patient education should emphasize reporting muscle stiffness and avoiding activities requiring alertness.



Mood Stabilizers: Balancing Bipolar Disorder

0.6-1.2

Therapeutic Range

mEq/L serum lithium level

2-3

Monitoring Frequency

Times per week initially

8-12

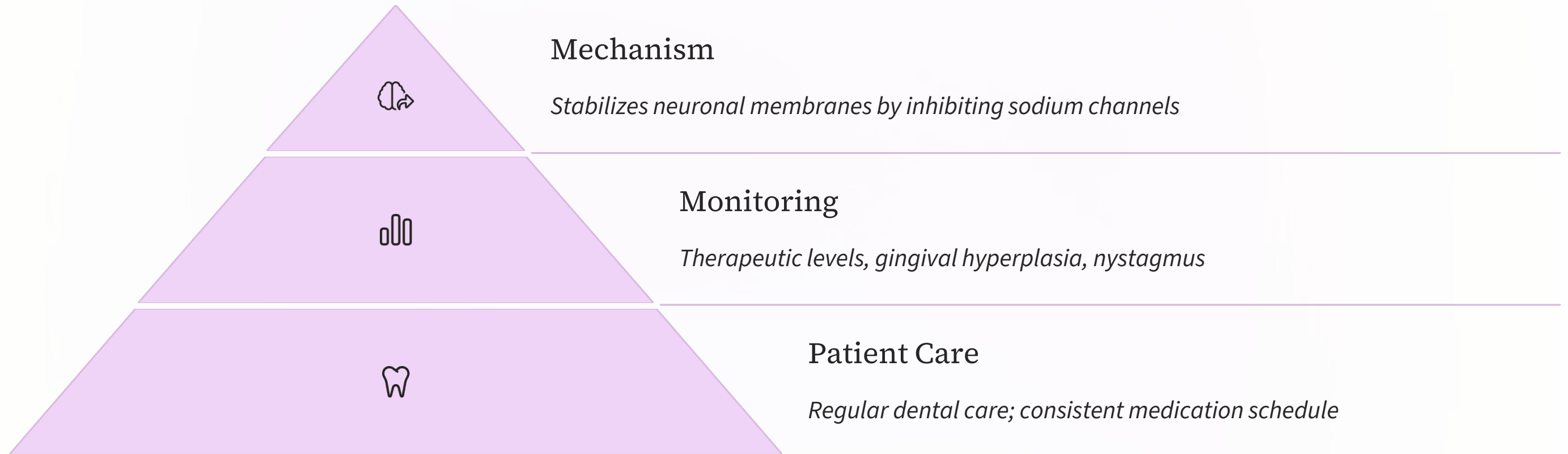
Fluid Intake

Cups of water daily

Lithium is the classic mood stabilizer for bipolar disorder, particularly effective for manic episodes. It works by modulating neurotransmitter activity to stabilize mood. Remember: "Lithium Levels Mood Swings" (LLMS).

Nursing care centers on monitoring serum lithium levels, renal function, and electrolytes. Patient teaching must emphasize maintaining consistent salt and fluid intake and recognizing signs of toxicity such as tremors and confusion. NSAIDs and ACE inhibitors can increase the risk of lithium toxicity.

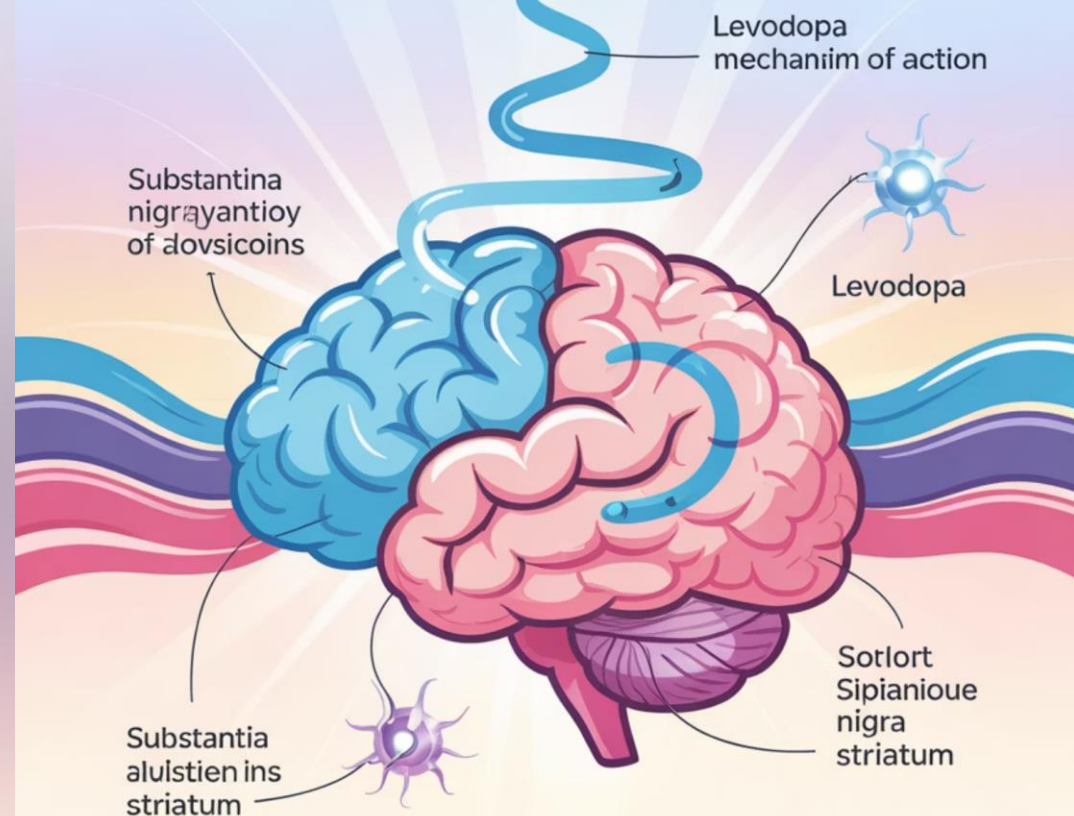
Antiepileptics: Seizure Control Medications



*Phenytoin is a primary antiepileptic medication for seizure disorders. It functions by stabilizing neuronal membranes through sodium channel inhibition. Remember the mnemonic: "**Phenytoin Prevents Seizures**" (PPS).*

Nursing care includes monitoring therapeutic levels and assessing for characteristic side effects like gingival hyperplasia and nystagmus. Patient teaching should emphasize the importance of regular dental care and medication adherence. Phenytoin can decrease the efficacy of oral contraceptives and should not be combined with alcohol.

Parkinson's Disease



Dopaminergic Agents: Parkinson's Disease Management

Administration

Take with food to reduce nausea; avoid high-protein meals that can interfere with absorption and efficacy

Mechanism

Levodopa crosses the blood-brain barrier and converts to dopamine, while carbidopa prevents peripheral conversion

Monitoring

Watch for dyskinesia, orthostatic hypotension, and gastrointestinal effects like nausea and vomiting

Levodopa/Carbidopa combination is the gold standard treatment for Parkinson's disease. It works by increasing dopamine levels in the brain to improve motor function. Remember: "Levodopa Lifts Dopamine Levels" (LLDL).

Nursing care focuses on monitoring for dyskinesia, nausea, and hypotension. Patients should be taught to take the medication with food to reduce nausea but avoid high-protein meals that can reduce efficacy. Antipsychotics can counteract the therapeutic effects.

Cholinesterase Inhibitors: Alzheimer's Treatment



Mode of Action

Inhibits acetylcholinesterase, increasing acetylcholine levels and improving memory



Nursing Care

Monitor for bradycardia and gastrointestinal effects like nausea, vomiting, and diarrhea



Patient Teaching

Take at bedtime to minimize side effects; report severe nausea or vomiting



Interactions

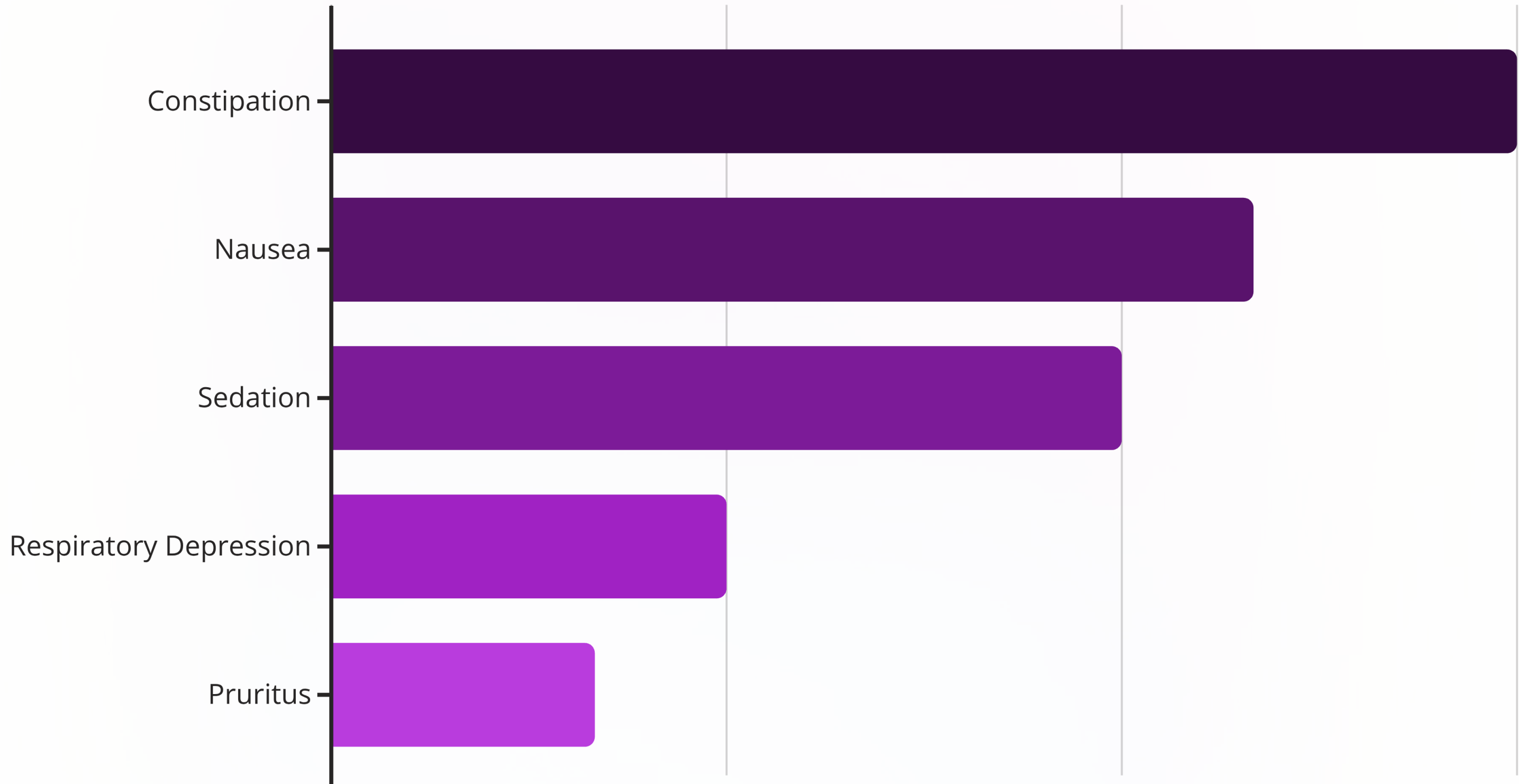
Increased risk of bradycardia when combined with beta-blockers

*Donepezil is a primary treatment for Alzheimer's disease. It works by inhibiting acetylcholinesterase, thereby increasing acetylcholine levels in the brain to improve cognitive function. Remember: "**Donepezil Defends Dementia Decline**" (DDD).*

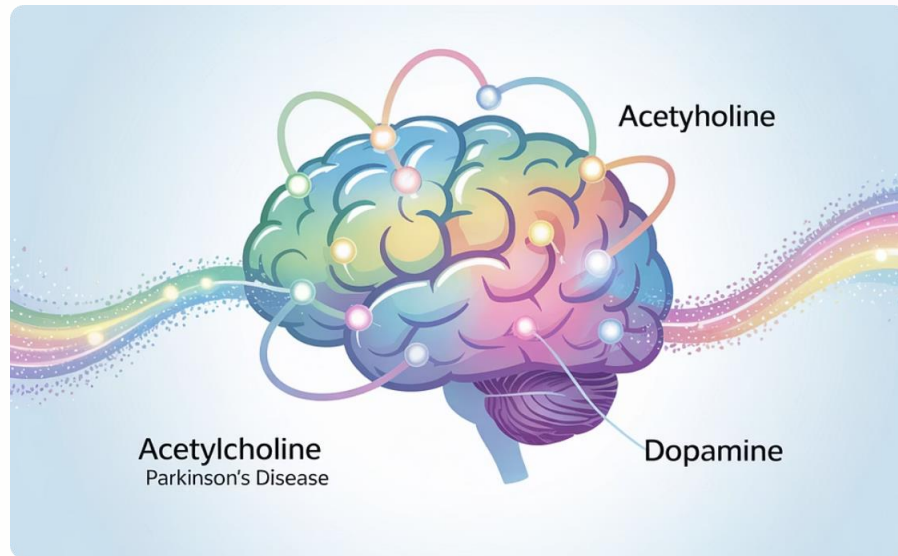
Nursing care includes monitoring for bradycardia and gastrointestinal effects. Patients should be instructed to take the medication at bedtime and report severe side effects. Beta-blockers can increase the risk of bradycardia when combined with cholinesterase inhibitors.



Opioid Analgesics: Managing Severe Pain



Antiparkinsonian Anticholinergics: Managing Movement Disorders



Mechanism of Action

Benztropine blocks acetylcholine, helping balance dopamine and acetylcholine levels in the brain to improve motor symptoms.

*Benztropine is used for Parkinson's disease and drug-induced extrapyramidal symptoms. It works by blocking acetylcholine to help balance neurotransmitter levels. Remember: "**Benztropine Balances Tremors**" (BBT).*

Nursing care includes monitoring for anticholinergic side effects like dry mouth, blurred vision, and urinary retention. Patient teaching should emphasize increasing fluid intake and avoiding overheating. These medications can have additive effects when combined with other anticholinergics.



Clinical Effects

Reduces tremors and rigidity by correcting the neurotransmitter imbalance that contributes to movement disorders.



Side Effect Management

Anticholinergic effects like dry mouth and blurred vision require increased fluid intake and careful monitoring.