

Psychiatric and Movement Disorders



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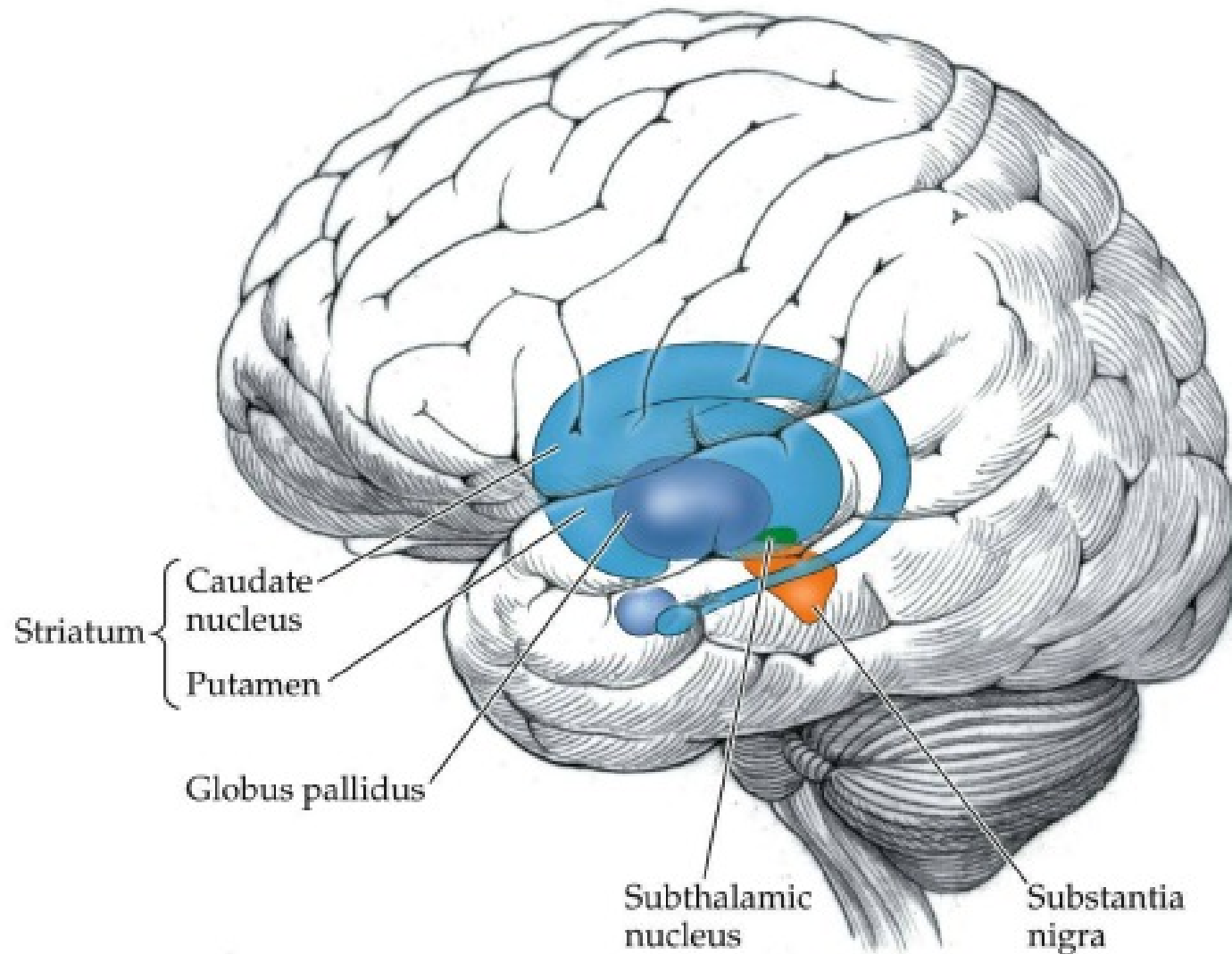
Doctor of Pharmacy Candidate, 2017

University of California San Francisco

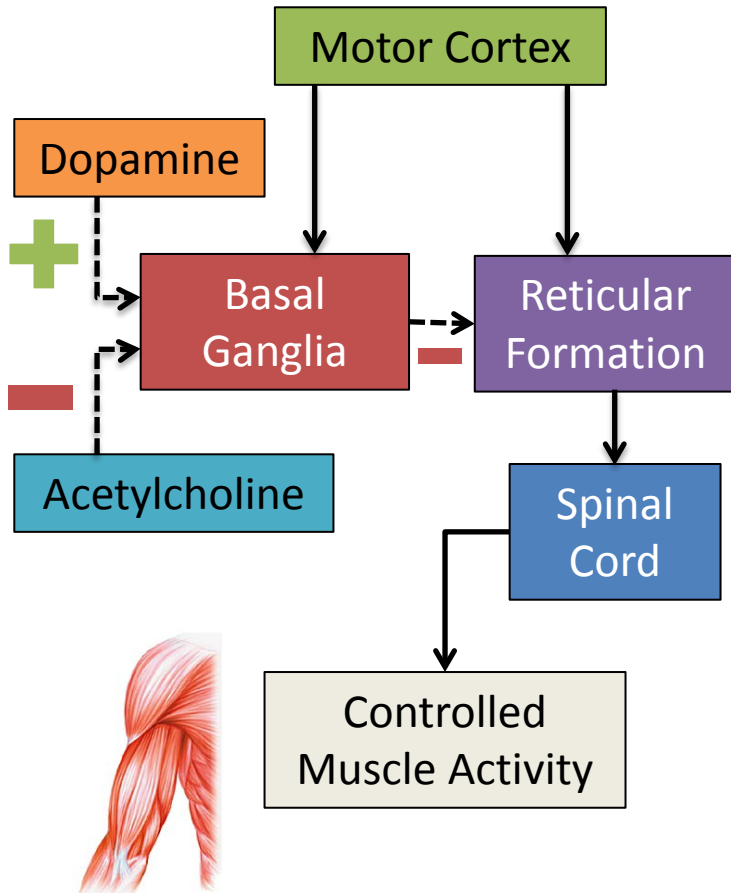
Session Summary

- **What you should already know:**
 - General pathophysiology of Parkinson's disease, schizophrenia, and Alzheimer's disease
- **What we will discuss today:**
 - Overview of the different drugs used to treat these disorders and their mechanism of action
 - Adverse effects of these drugs and how to manage them
- **What you should be able to do:**
 - Recognize adverse effects that impact physical therapy
 - Understand disease and adverse effect management

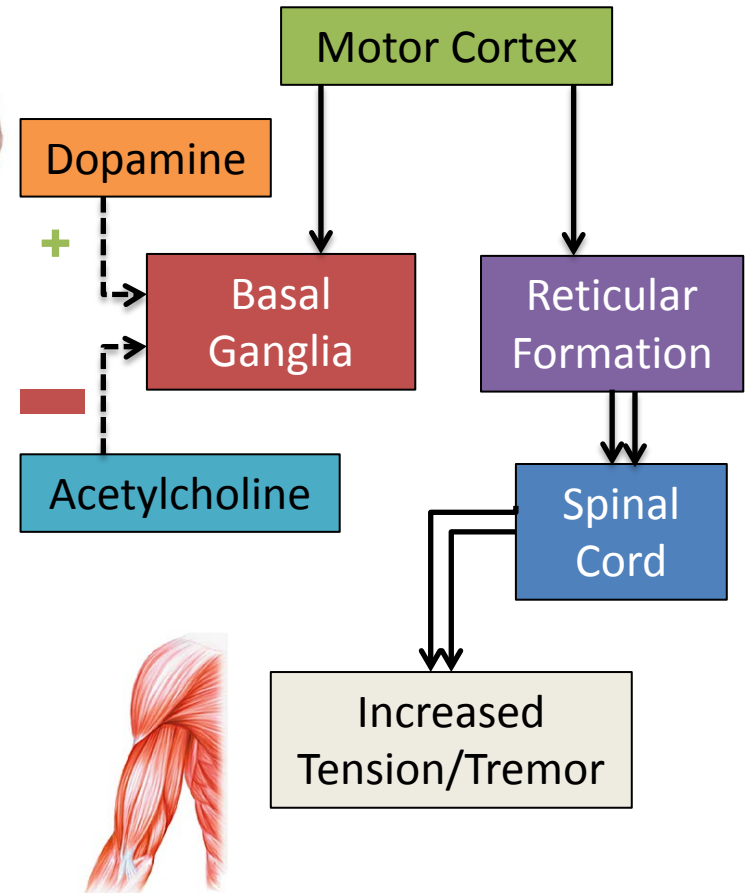
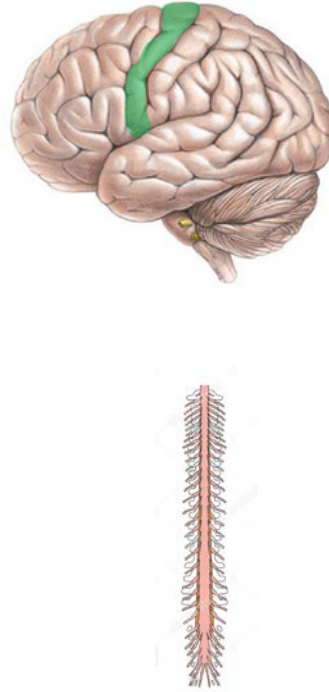
Parkinson's Disease Pathophysiology



Parkinson's Disease Pathophysiology



Normal Function



Parkinson's Disease

Parkinson's Disease Symptoms

Motor Symptoms

- **Bradykinesia**
- **Resting tremor**
- **Rigidity**
- **Postural imbalance**
- Dysarthria
- Dysphagia
- Hypophonia
- Micrographia
- Siallorhea

Mental Status

- Dementia
- Depression
- Sleep disorders

Autonomic Disturbances

- Constipation
- Urinary incontinence
- Diaphoresis
- **Orthostatic hypotension**
- Parasthesia
- Pain

Parkinson's Disease Treatment

Monoamine Oxidase B Inhibitors

- Rasagiline (AZILECT®), Selegiline (ELDERPRYL®)

Catechol-O-Methyl Transferase Inhibitors

- Entacapone (COMTAN®), Tolcapone (TASMAR®)

Dopamine Receptor Agonists

- Pramipexole (MIRAPEX®), Ropinerole (REQUIP®), Apomorphine (APOKYN®), Bromocriptine (CYCLOSET®)

L-Dopa/Peripheral Decarboxylase Inhibitor

- Carbidopa/Levodopa (SINEMET®)

Anticholinergics

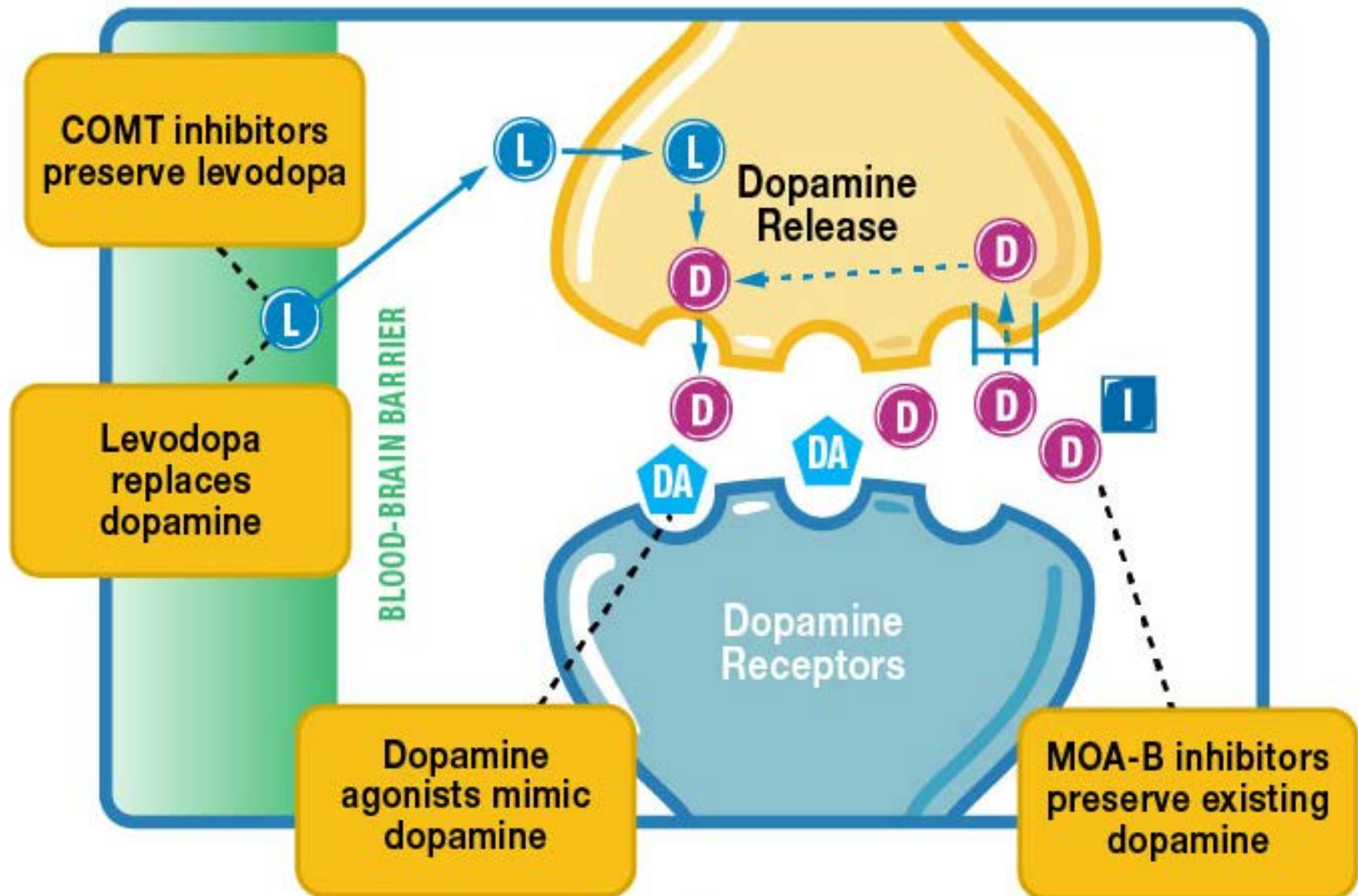
- Trihexyphenidyl (ARTANE®), Benzotropine (CONGENTIN®)

Other

- Amantidine

Parkinson's Disease

Treatment Mechanisms



Parkinson's Disease

Treatment Adverse Effects

Carbidopa/Levodopa



- Nausea
- **Orthostatic hypotension**
- **Choreiform dyskinesias**
- **Dystonic dyskinesias**
- **Tremor**
- Parasthesia

Rasagiline, Selegiline



- Nausea
- **Orthostatic hypotension**
- Insomnia
- Hallucinations

Pramipexole



- Nausea
- **Orthostatic hypotension**
- Sedation
- Lower extremity edema
- Hallucinations
- Confusion
- Compulsive behavior

Benzotropine, Trihexyphenidyl

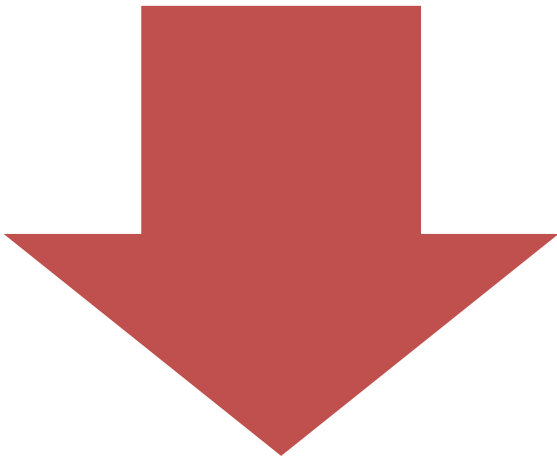


- **Blurred vision**
- Confusion
- Constipation
- Dry mouth
- Urinary retention

Schizophrenia Pathophysiology

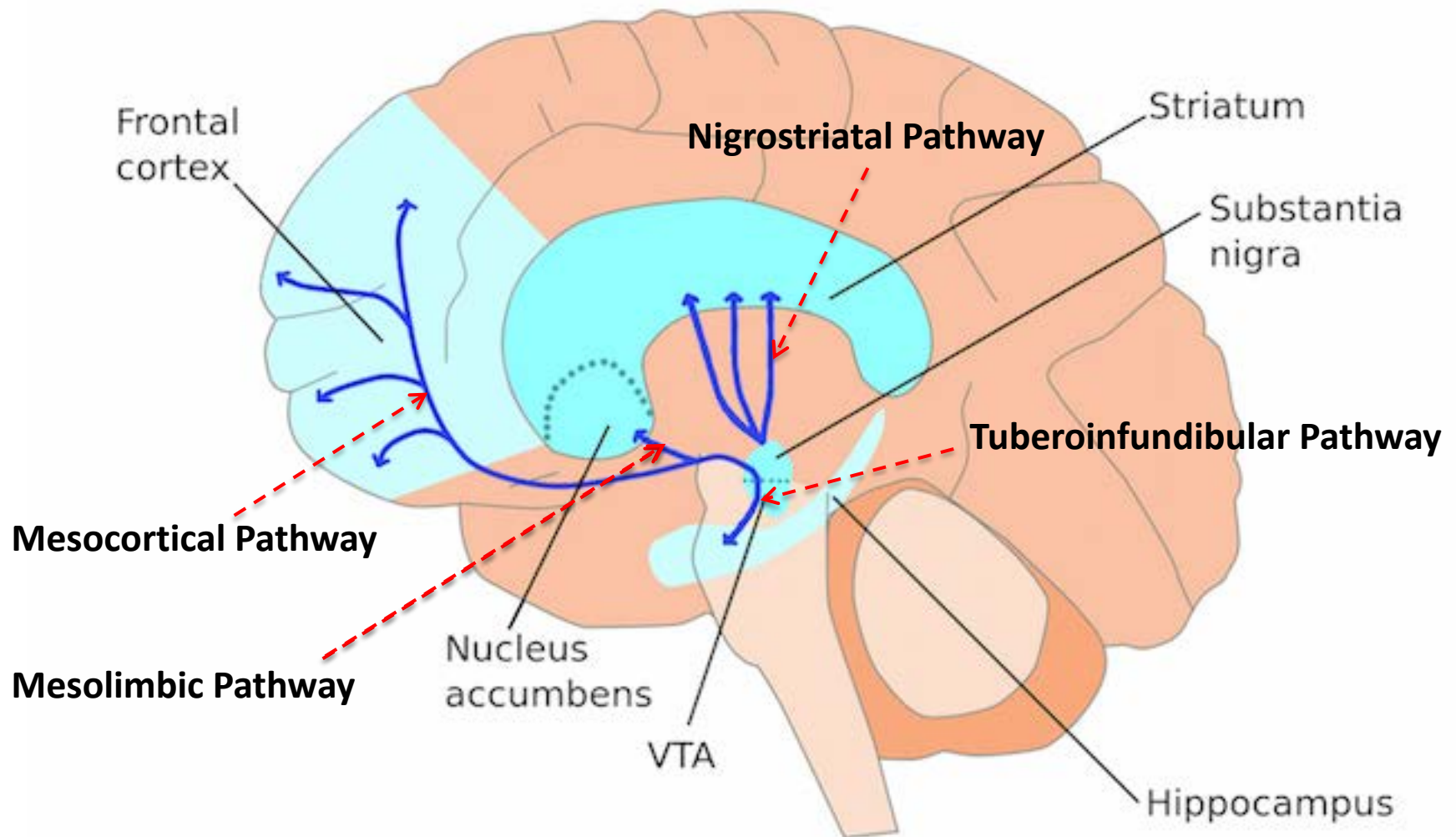


**OVER activity of
dopamine in
mesolimbic pathway**

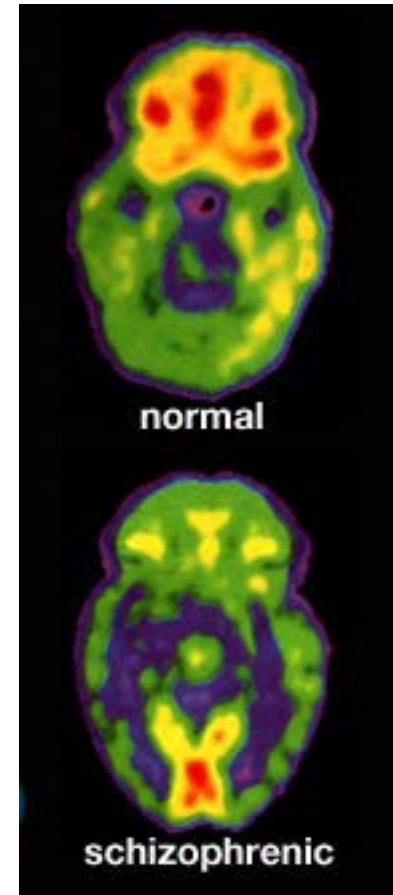
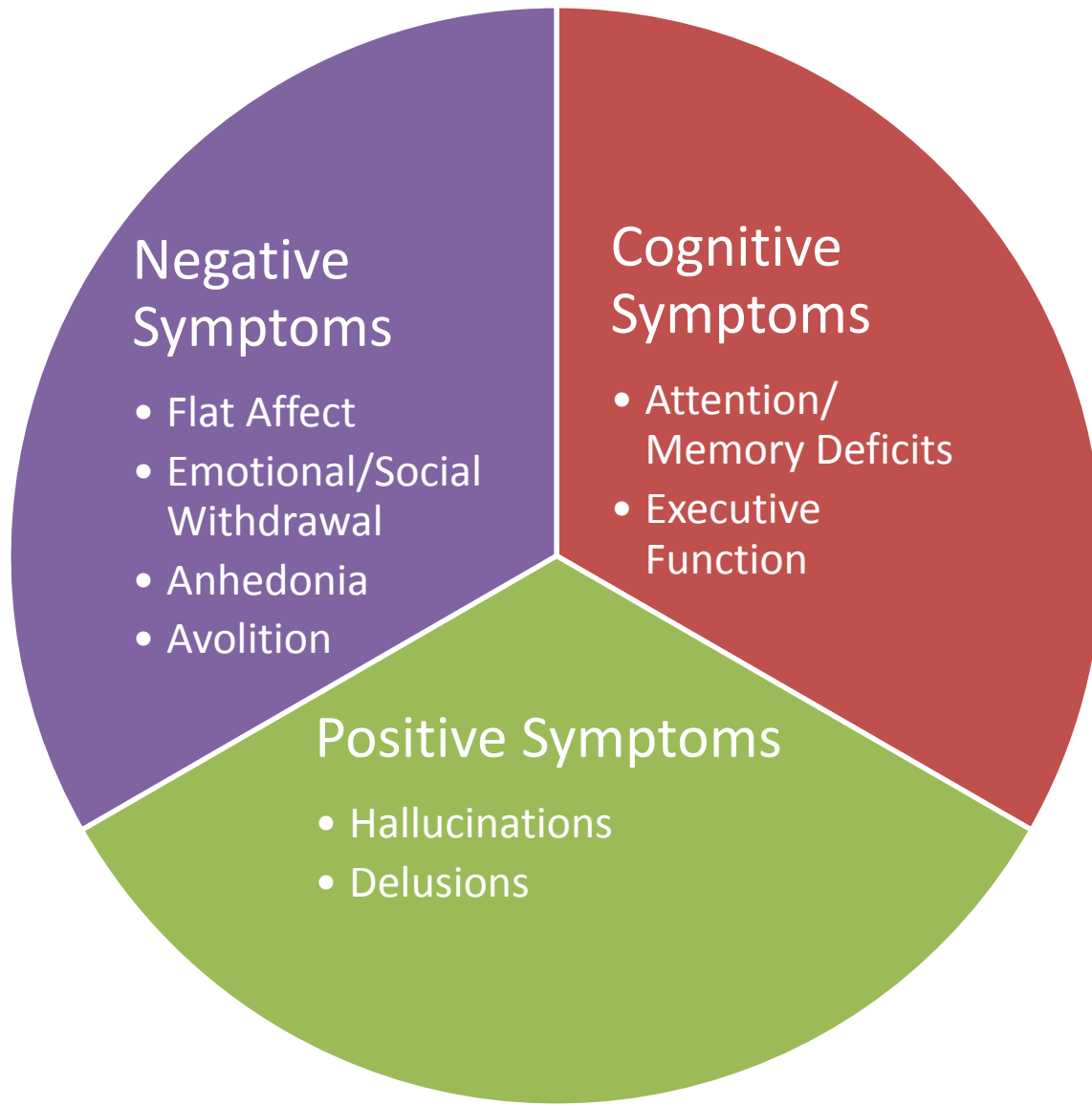


**UNDER activity of
dopamine in
mesocortical pathway**

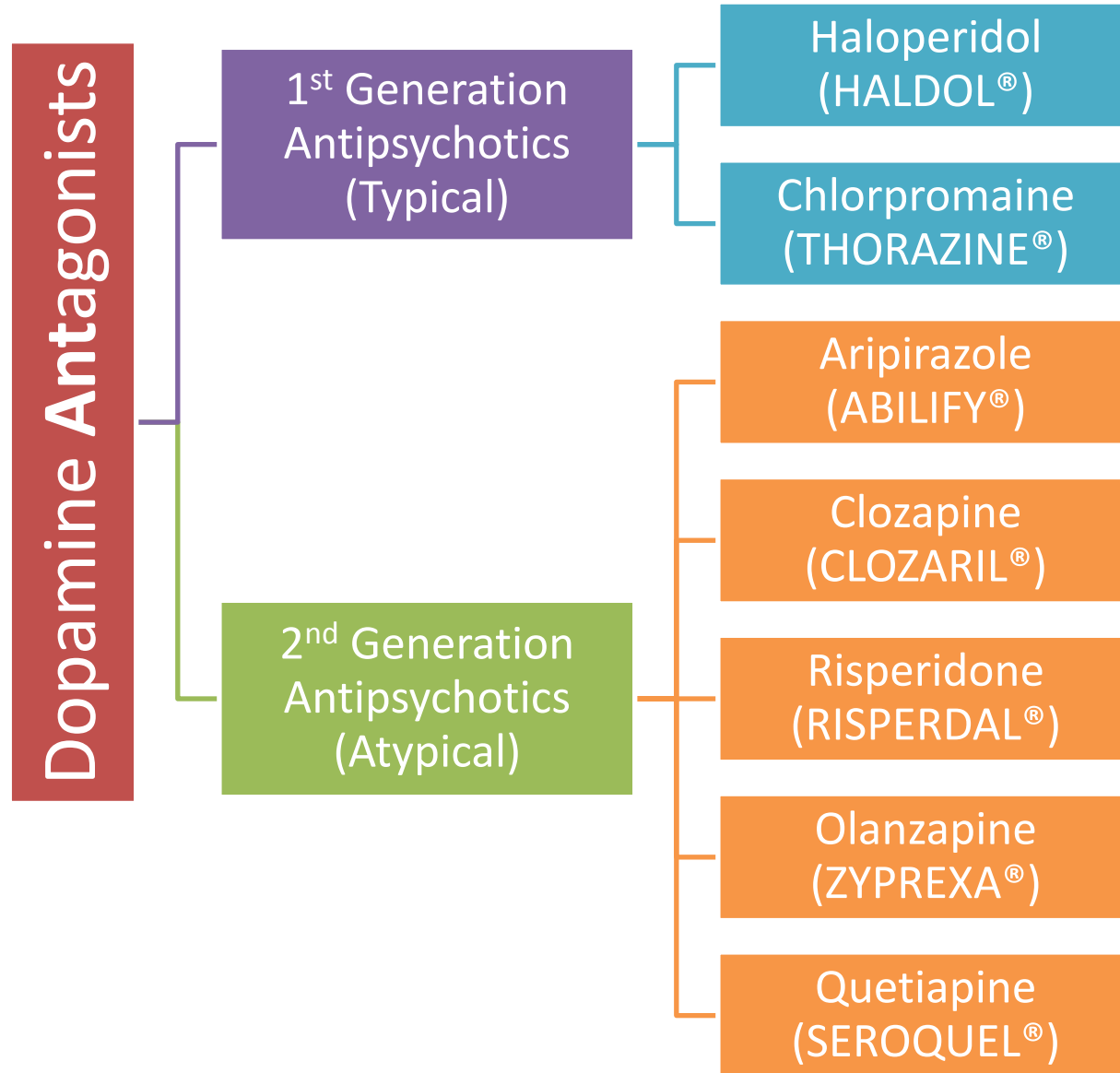
Dopamine Pathways in the Brain



Schizophrenia Symptoms



Schizophrenia Treatment

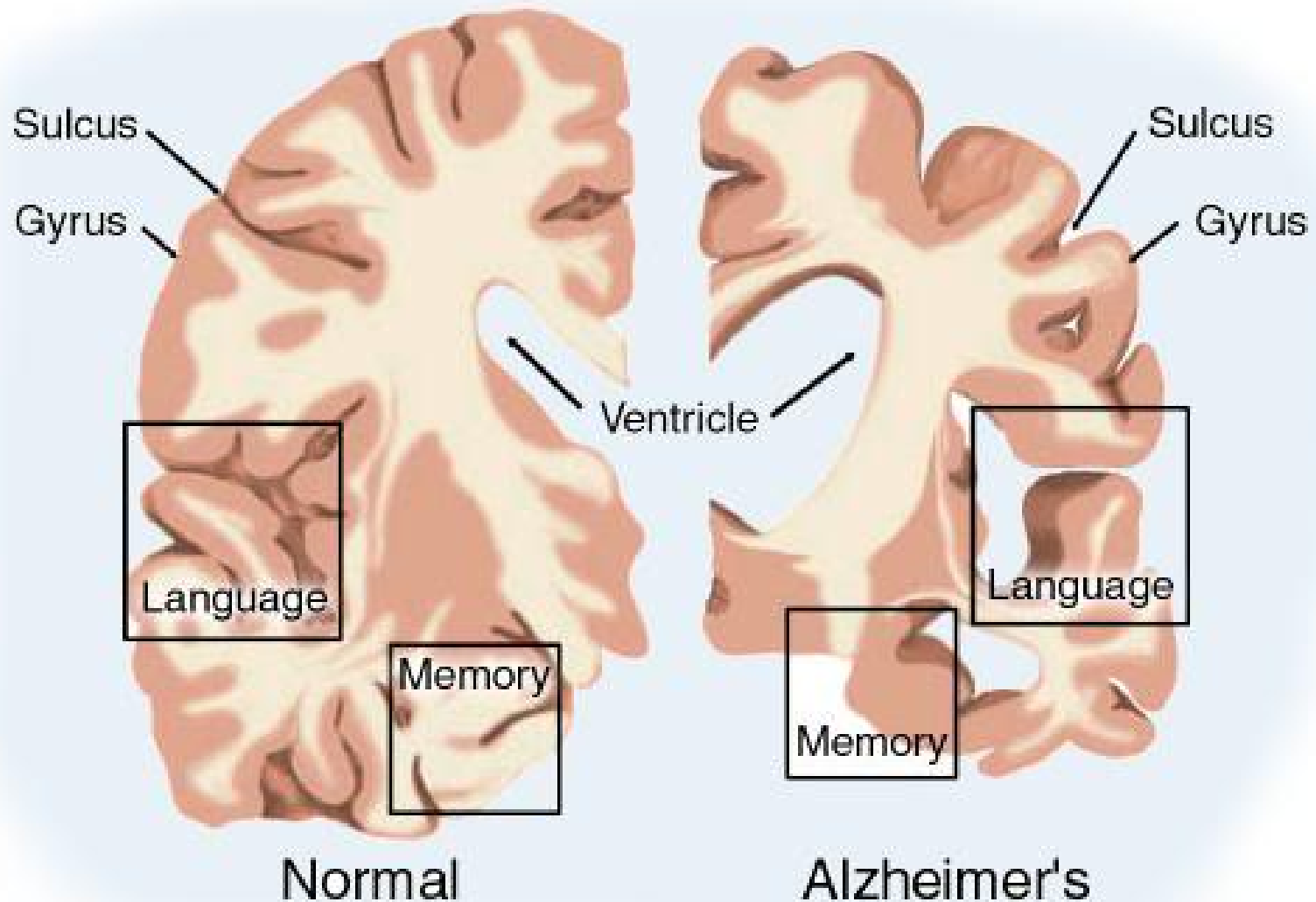


Schizophrenia Treatment

Adverse Effects

	1 st Generation Antipsychotics	2 nd Generation Antipsychotics
Extrapyramidal Symptoms	++	+
Weight Gain/ Metabolic Effects	+	++
Efficacy on Negative/Cognitive Symptoms	-	+
Efficacy on Positive Symptoms	++	++

Alzheimer's Disease Pathophysiology



Alzheimer's Disease Symptoms

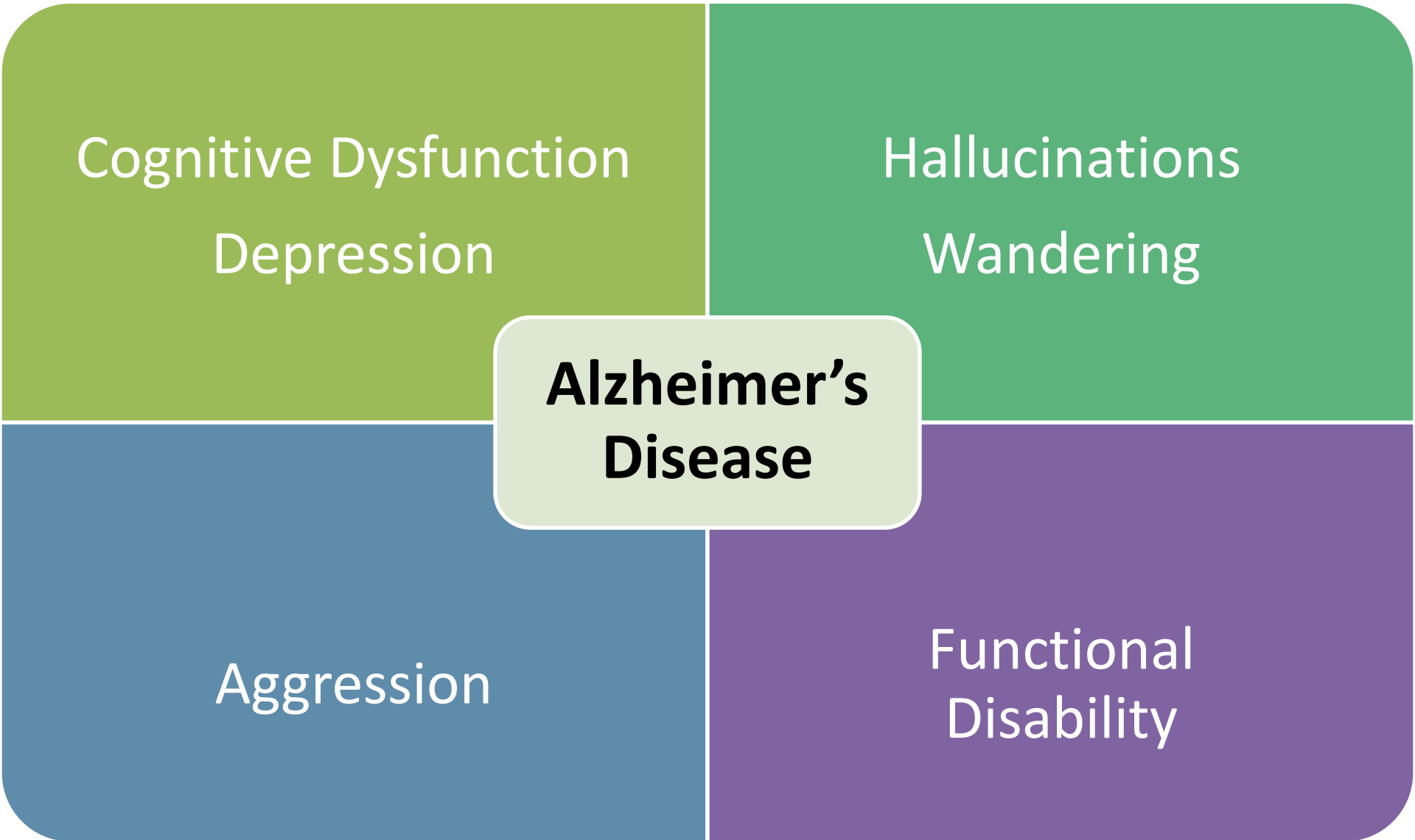
Cognitive Dysfunction
Depression

Hallucinations
Wandering

**Alzheimer's
Disease**

Aggression

Functional
Disability



Alzheimer's Disease Treatment

Cholinesterase Inhibitors

Donepezil
(ARICEPT®)

Rivastigmine
(EXELON®)

NMDA Antagonists

Memantine
(NAMENDA®)

Alzheimer's Disease Treatment

Adverse Effects

**Cholinesterase
Inhibitors**

**NMDA
Antagonists**

Fatigue

Syncope/Falls

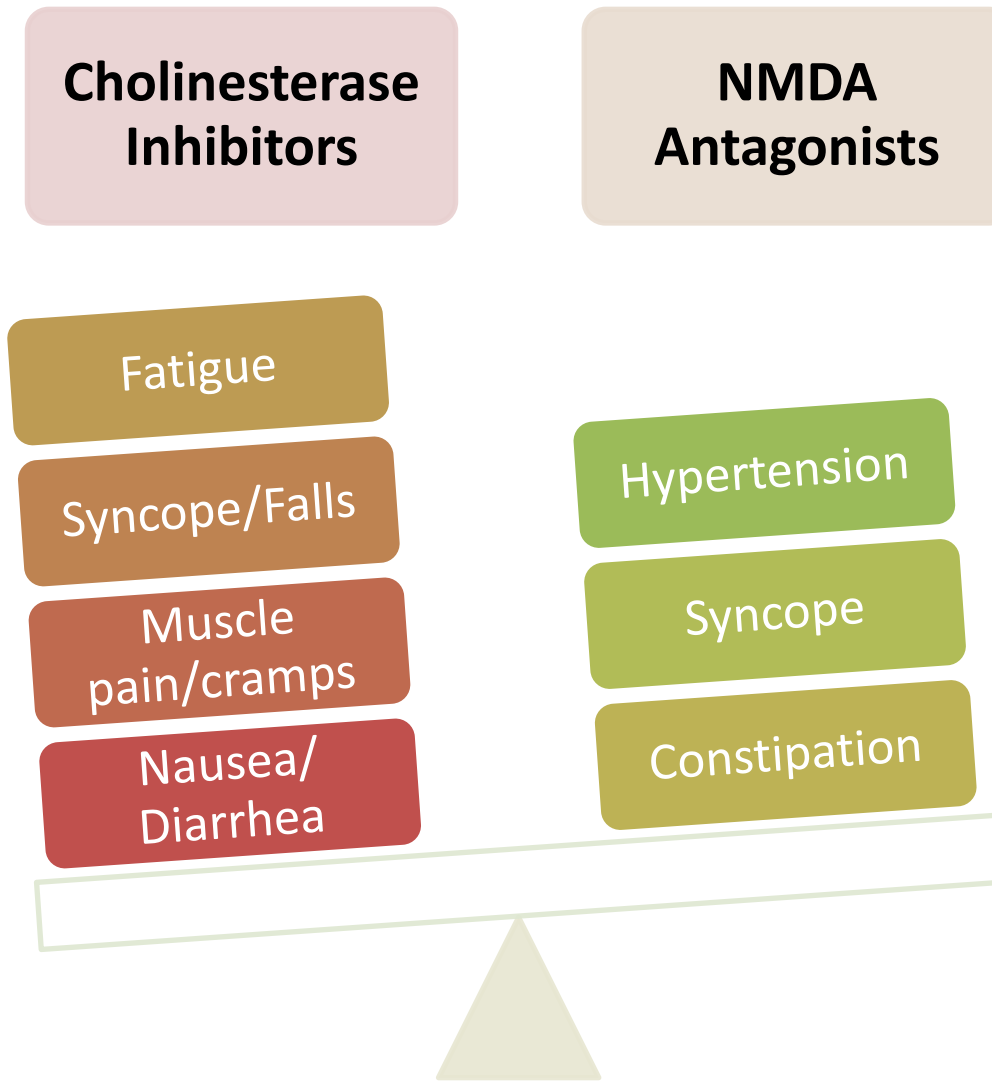
Muscle
pain/cramps

Nausea/
Diarrhea

Hypertension

Syncope

Constipation



Depression Treatment

Selective Serotonin Reuptake Inhibitors (SSRI)

- Citalopram (CELEXA®)
- Fluoxetine (PROZAC®)
- Sertraline (ZOLOFT®)

Serotonin Norepinephrine Reuptake Inhibitors (SNRI)

- Venlafaxine (EFFEXOR®)
- Duloxetine (CYMBALTA®)

Other

- Mirtazepine

Depression Treatment

Adverse Effects

Selective Serotonin Reuptake Inhibitors (SSRI)

- Nausea, diarrhea, **asthenia**, **dizziness**, xerostomia

Serotonin Norepinephrine Reuptake Inhibitors (SNRI)

- **Falls**, sweating, **dizziness**, weight loss, **asthenia**, hypertension
- Treats neuropathic pain

Other

- Mirtazepine: **weight gain**, sedation

Bipolar Disorder Treatment

Adverse Effects

Lithium

- N/V/D
- Sedation
- Tremor (EPS)
- Muscle weakness
- Weight gain
- Ataxia

Valproate

- N/V/D
- Weight gain
- Ataxia
- Hypotension

Benzodiazepines

Benzodiazepines

- Diazepam (VALIUM®)
- Lorazepam (ATIVAN®)

Bind to GABA
Receptors:
Inhibitory Effects

Indications

Acute agitation

Insomnia

Seizures

Anxiety

Alcohol
dependence

Muscle relaxant

Benzodiazepines

Adverse Effects

Somnolence

Ataxia/Incoordination

Muscle Weakness

Hypotension/Falls

Abuse/Dependence

Respiratory Depression

Questions?



References

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- Parkinson's Treatment. (n.d.). Retrieved April 05, 2016, from <http://www.azilect.com/aboutparkinsonsdisease/parkinsonstreatment>
- Lexi-comp Online [™], April 06, 2016.
- Micromedex[®] 2.0, April 05, 2016.
- Dipiro, JT, et al. Pharmacotherapy: A Pathophysiologic Approach, 7th Edition. New York: McGraw Hill, 2008. Book.

Supplemental Slide

- Parkinson's Movements:

<https://www.youtube.com/watch?v=d0NYC1JICLA>

- Dystonic Dyskinesias:

<https://www.youtube.com/watch?v=FUr8ltXh1Pc>