

# Parkinson's Disease FAQ

*Sam Forrester, PharmD  
Staff Pharmacist, Deep River Drug*

# Disclaimers

- ◆ I am not an expert on Parkinson's Disease or its treatment
- ◆ Please do not start or stop any medications you are taking without discussing with your healthcare provider first

# Who Am I?

- ◆ Background in education: BS Biology, BA Chemistry, MS Clinical Research, PharmD
- ◆ Background in pharmacy: Kerr Drug, Walgreens, Deep River Drug

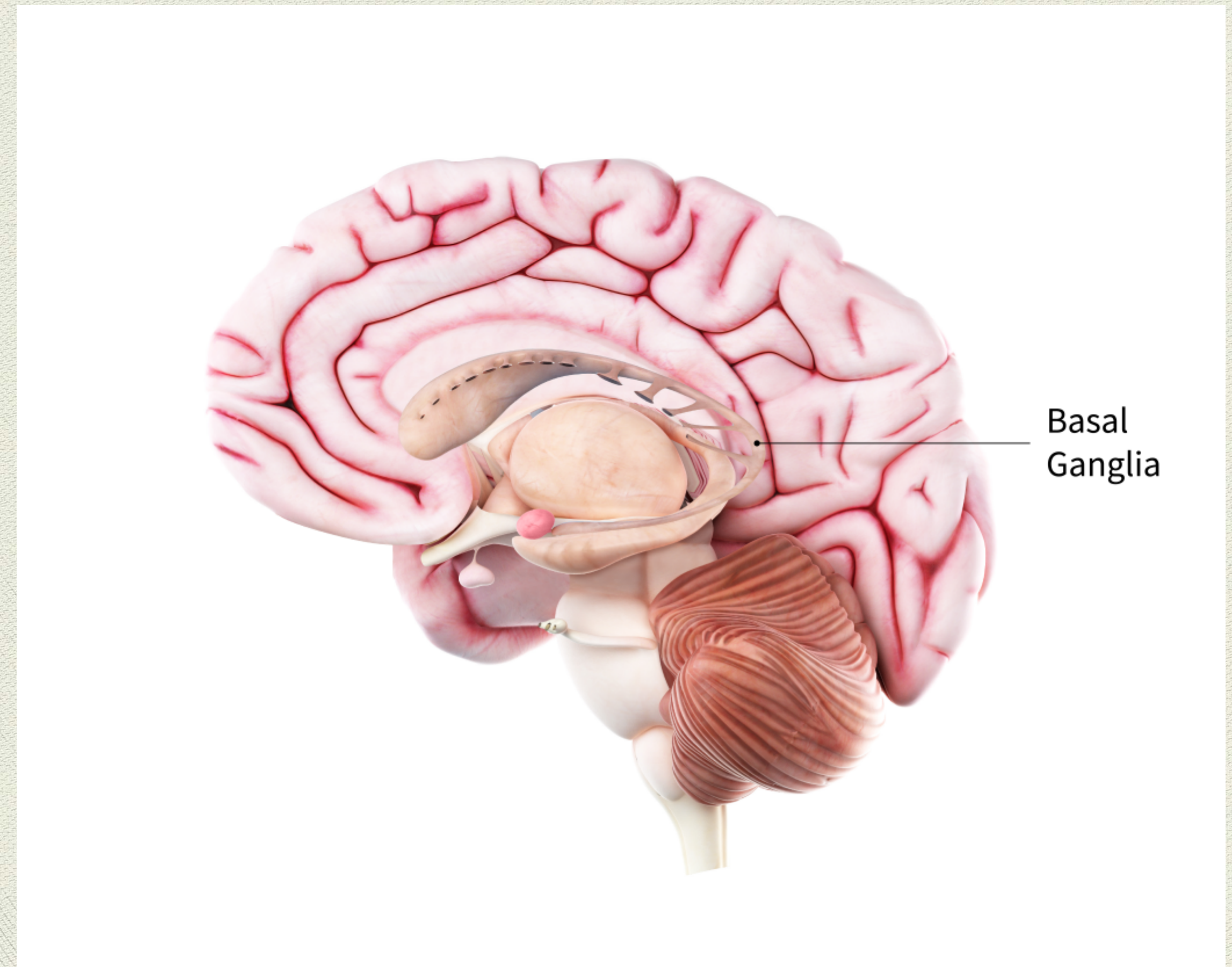


# Parkinson's: A Brief Overview

- ◆ Cause - There is no firm cause that has been identified, current research suggests that it is a combination of genetics and environmental factors
- ◆ Genetics does play a role, however, it does not appear that the disease is familial

# Parkinson's: A Brief Overview

- ◆ So what's happening?
- ◆ Nerve cells in the basal ganglia begin to die (cause is not known)
- ◆ Less nerve cells = less dopamine
- ◆ Dopamine is responsible for “the M’s”:  
memory, mood, movement, motivation



# Parkinson's: A Brief Overview

- ◆ Patients also lose nerve endings that produce norepinephrine
  - ◆ This leads to the “non-motor” symptoms sometimes associated with PD such as, fatigue, irregular heartbeat, slowed movement of food through the GI tract, orthostatic hypotension, etc.

# Parkinson's: A Brief Overview

- ◆ PD is a progressive disease, meaning, symptoms gradually worsen over time
- ◆ Symptoms:
  - ◆ Main symptoms revolve around motor / muscle control like tremor (hands, arms, legs, jaw, neck), muscle stiffness, slowed movement, and impaired balance / coordination
  - ◆ Secondary symptoms include depression, impaired swallowing, urinary problems / constipation, skin problems

# Parkinson's Disease: Goals of Therapy

- ◆ Ultimately, there is no cure for Parkinson's at the present time
- ◆ Goals of therapy are to:
  - ◆ Improve motor and non-motor symptoms
  - ◆ Maintain/Improve quality of life
- ◆ All treatment options currently available are designed to provide relief from symptoms



# Parkinson's: Treatment

- ◆ Non-pharmacologic treatments include:
  - ◆ Support
  - ◆ Education
  - ◆ Exercise
  - ◆ Nutrition

# Parkinson's: Treatment

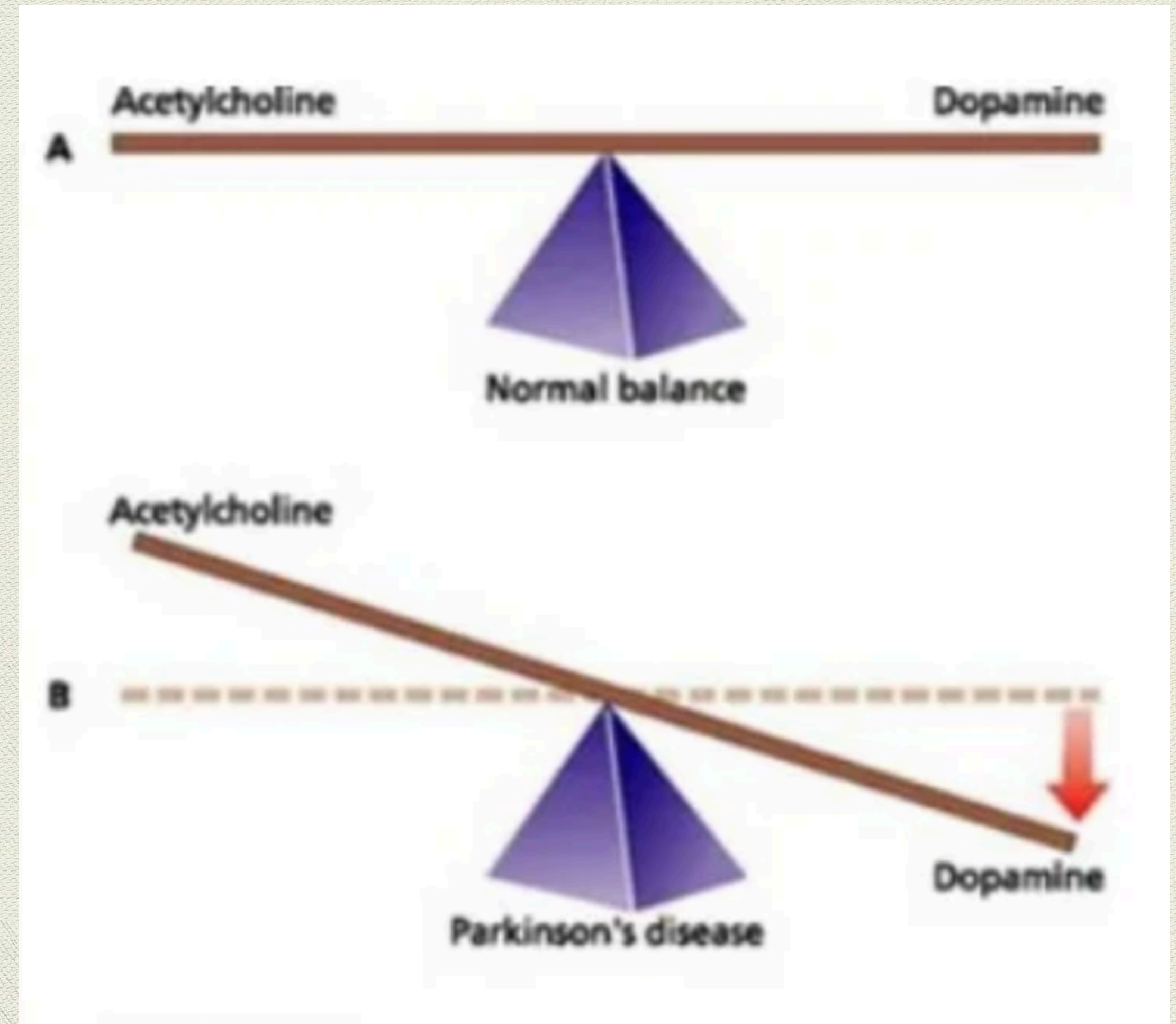
- ◆ Pharmacologic Treatments:
  - ◆ Anticholinergics - benztropine, trihexyphenidyl
  - ◆ Dopamine precursor and augmentation - levodopa
    - ◆ Carbidopa, entacapone, tolcapone, MOAI (rasagiline, selegiline)
  - ◆ Dopamine receptor agonists - pramipexole, ropinirole, rotigotine
  - ◆ Misc. - amantadine

# Neurotransmitters Briefly

- ◆ Neurotransmitters fall broadly into three categories, excitatory, inhibitory, and modulatory
- ◆ Acetylcholine vs. Dopamine
  - ◆ Acetylcholine = excitatory; plays a roll in muscle contraction, production of sweat and saliva, controls heartbeat
  - ◆ Dopamine = modulatory; plays a roll in memory, learning, behavior, movement control

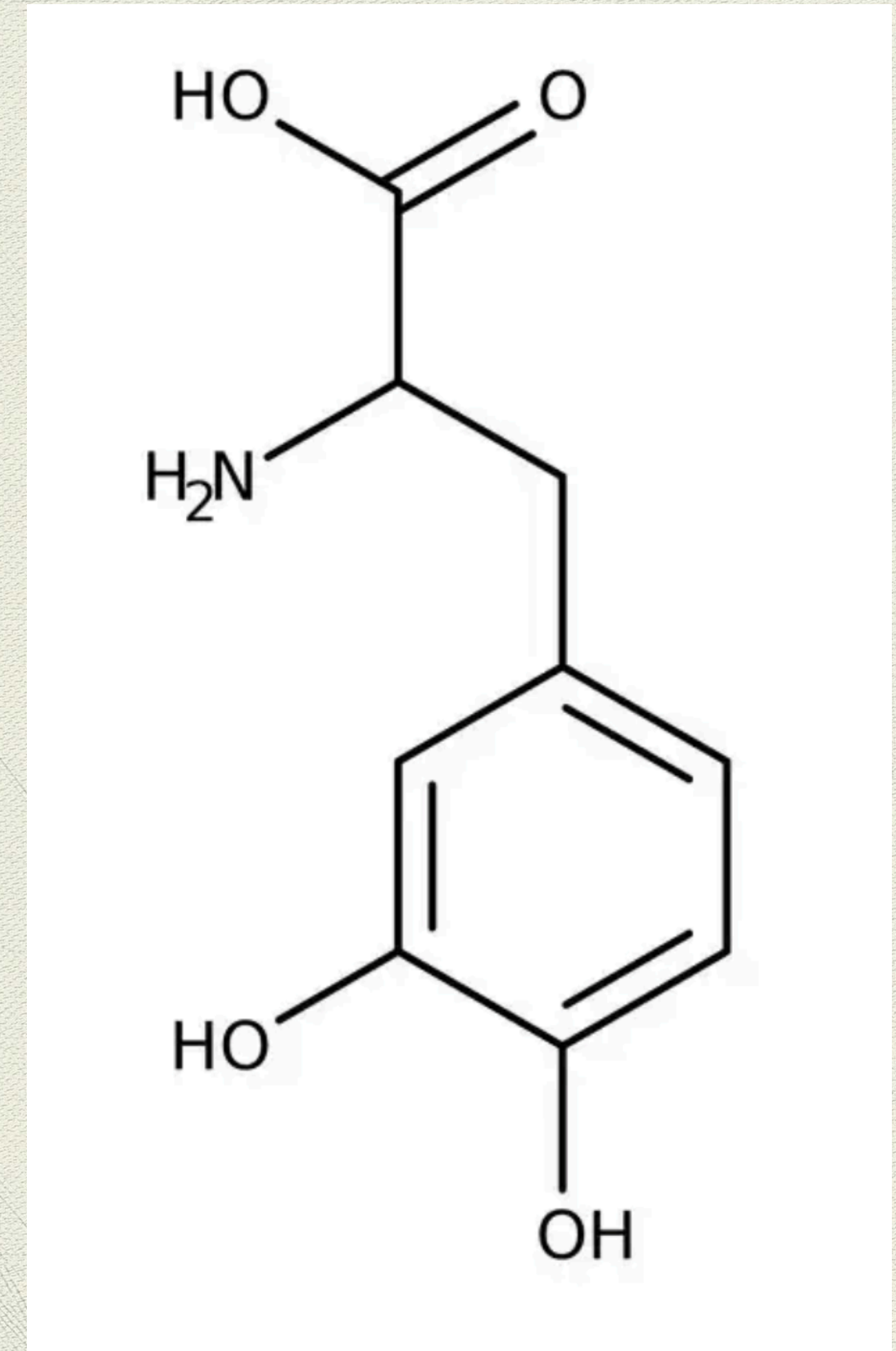
# Pharmacologic Treatment

- ◆ Anticholinergic Drugs:
  - ◆ Benztropine / Trihexyphenidyl
  - ◆ Loss of dopamine leads to increased acetylcholine which leads to dystonia (involuntary, repetitive muscle cramping)
  - ◆ Anticholinergics reduce acetylcholine
  - ◆ Side effects include; excessive drying, urinary retention, constipation



# Pharmacologic Treatment

- ◆ Levodopa (or L-dopa)
  - ◆ Prodrug - it is metabolized into dopamine by the body
  - ◆ Usually paired with carbidopa - this helps the L-dopa to last longer in the body
  - ◆ Also can be paired with entacapone - also helps L-dopa to last longer in the body
  - ◆ Side effects include; N/V, dizziness, lightheadedness, dyskinesias (impairment or abnormality of normal movement)



# Pharmacologic Treatment

- ◆ Dopamine and:
  - ◆ End of dose wearing off - as neurons continue to die, L-dopa may start wearing off prior to next dose, as a result, increasing dose strength/frequency may be needed
  - ◆ Dyskinesias - peak doses can lead to involuntary choreiform movements of neck, trunk, and lower/upper extremities. As a result, doses may have to be lowered
  - ◆ “Off-period dystonia - sustained muscle contractions (usually occurring in foot and usually occurring in early morning hours). Symptoms improve with first dose, but may consider a controlled-release drug prior to bed or addition of other medicines

# Pharmacologic Treatment

- ◆ MAOIs
  - ◆ Monoamine oxidase is an enzyme that is responsible for removing dopamine from the brain - inhibiting this causes dopamine to last longer
- ◆ Side effects include; nausea, diarrhea or constipation, dizziness / lightheadedness

COMPARE TO THE ACTIVE INGREDIENTS IN VICKS'® NYQUIL® COUGH\*

**FAMILY**  
**wellness™**

NDC 55319-499-12

## Nighttime Cold

### COUGH SUPPRESSANT

Dextromethorphan HBr - Cough Suppressant  
Doxylamine succinate - Antihistamine

**RELIEVES**

- sneezing & runny nose
- cough

For ages 12 years and over  
Nighttime Relief  
Alcohol 10%

  
CHERRY FLAVOR

OTC network

100% SATISFACTION OR YOUR MONEY BACK GUARANTEED

12 fl oz (355 mL)

Drug Facts	
<b>Active ingredients (in each 30 mL)</b>	<b>Purposes</b>
Dextromethorphan HBr 30 mg.....	Cough suppressant
Doxylamine succinate 12.5 mg.....	Antihistamine
<b>Uses</b> ■ temporarily relieves cold symptoms ■ cough due to minor throat and bronchial irritation ■ runny nose and sneezing	
<b>Warnings</b> <b>Do not use</b> if you are now taking a prescription monoamine oxidase inhibitor (MAOI) (certain drugs for depression, psychiatric or emotional conditions, or Parkinson's disease), or for 2 weeks after stopping the MAOI drug. If you do not know if your prescription drug contains an MAOI, ask a doctor or pharmacist before taking this product.	
<b>Ask a doctor before use if you have</b> ■ glaucoma ■ cough that occurs with too much phlegm (mucus) ■ a breathing problem or chronic cough that lasts or as occurs with smoking, asthma, chronic bronchitis or emphysema ■ trouble urinating due to enlarged prostate gland	
<b>Ask a doctor or pharmacist before use if you are taking</b> sedatives or tranquilizers.	
<b>When using this product</b> ■ excitability may occur, especially in children ■ marked drowsiness may occur ■ avoid alcoholic drinks ■ alcohol, sedatives, and tranquilizers may increase drowsiness ■ be careful when driving a motor vehicle or operating machinery	
<b>Stop use and ask a doctor if</b> cough lasts more than 7 days, comes back, or is accompanied by fever, rash, or persistent headache. These could be signs of a serious condition.	
<b>If pregnant or breast-feeding,</b> ask a health professional before use. <b>Keep out of reach of children.</b> In case of overdose, get medical help or contact a Poison Control Center (1-800-222-1222) right away.	

# Pharmacologic Treatment

- ◆ Dopamine Receptor Agonists
  - ◆ Pramipexole, ropinirole, rotigotine - act directly on dopamine receptors
  - ◆ Can reduce “off” time while on L-dopa as well as reductions in overall dosage
  - ◆ Side effects include; dizziness / lightheadedness (orthostatic), confusion, drowsiness
- ◆ Misc - Amantadine
  - ◆ Modest symptomatic benefit, and may reduce L-dopa induced dyskinesias (mechanism is unknown)
  - ◆ Side effects include; confusion, dizziness, dry mouth, and hallucinations



# Frequently Asked Questions

- ◆ What are signs you are being overmedicated?
  - ◆ Finding the balance between therapeutic benefit vs. unwanted side effects
- ◆ Can weight loss affect medication dose?
  - ◆ Generally speaking, no. There are a few drugs that are dosed based on weight (some antibiotics, chemotherapy agents) but most prescription medications are not
  - ◆ Start low, go slow (titration and medications). Best to start at a lower dose to reduce the risk of side effects and allow your body to become accustomed to the medication. Then gradually increase dose as your body gets used to it

# Frequently Asked Questions

- ◆ Should I take carbidopa / levodopa on an empty stomach? How long should I wait before / after I eat to take it?
- ◆ Rule of thumb is 30 minutes before or 1-2 hours after eating
- ◆ This can sometimes prove to be difficult when multiple doses / day need to be taken
- ◆ There is no hard and fast rule stating you should take carbidopa / levodopa on an empty stomach...

# Frequently Asked Questions

- ◆ Continued from previous
- ◆ However, you should be mindful of what you are eating
- ◆ Avoid protein-rich foods (beef, pork, fish, chicken, tofu, milk, cheese, beans, seeds, nuts, and whole grains)
  - ◆ These foods are broken down into amino acids that compete with absorption of levodopa (which reduces effectiveness)
- ◆ If possible, save protein for meals at the end of the day
- ◆ If weight loss is a problem, try to eat calorie rich foods while postponing protein intake until the end of the day

# Frequently Asked Questions

- ◆ Drug Interactions
  - ◆ Generally safe vs. use with caution/monitor vs. hard stop
  - ◆ L-dopa + antihypertensives may increase risk for hypotension (similar drug interactions with dopamine receptor agonists)
  - ◆ Amantadine + potassium can increase risk of GI ulcerative lesions

# Frequently Asked Questions

- ◆ Drug Interactions (continued)
  - ◆ MAOI - In general, patients on a MAOI want to avoid two types of medications: those that can elevate blood pressure via sympathomimetic actions (e.g., phenylephrine and oxymetazoline) and those that can increase serotonin levels via 5-HT reuptake inhibition (e.g., dextromethorphan, chlorpheniramine, and brompheniramine)
  - ◆ All of these are found in common OTC cough/cold medications
  - ◆ Can lead to “hypertensive crisis”

TABLE 1.

## Significant Drug Interactions with MAOIs

Drug Class	Absolute Contradictions (Never Use)	Avoid (Use with Caution)
Psychotropics	MAOIs (antidepressants) <ul style="list-style-type: none"> <li>• Isocarboxid</li> <li>• Moclobemide</li> <li>• Phenzelzine</li> <li>• Selegiline</li> <li>• Tranylcypromine</li> </ul> MAOIs (non-antidepressants) <ul style="list-style-type: none"> <li>• Furazolidone (antimicrobial)</li> <li>• Isoniazid (antimicrobial)</li> <li>• Linezolid (antimicrobial)</li> <li>• Procarbazine (antimicrobial)</li> </ul> Non-MAOI antidepressants <ul style="list-style-type: none"> <li>• Nefazodone</li> <li>• SSRIs               <ul style="list-style-type: none"> <li>- Citalopram</li> <li>- Escitalopram</li> <li>- Fluoxetine</li> <li>- Fluvoxamine</li> <li>- Paroxetine</li> <li>- Sertraline</li> <li>- Vilazodone</li> </ul> </li> <li>• SNRIs               <ul style="list-style-type: none"> <li>- Desmethylvenlafaxine</li> <li>- Duloxetine</li> <li>- Milnacipran</li> <li>- Venlafaxine</li> </ul> </li> <li>• Tricyclic antidepressant               <ul style="list-style-type: none"> <li>- Clomipramine</li> </ul> </li> <li>• Vortioxetine</li> <li>• Reboxetine</li> </ul>	Antidepressants <ul style="list-style-type: none"> <li>• Agomelatine</li> <li>• Bupropion</li> <li>• Mirtazapine</li> <li>• Tricyclic antidepressants<sup>a</sup></li> <li>• Tianeptine<sup>c</sup></li> </ul>

Analgesics (cough/  
cold/sinus prepara-  
tions)

Cyclobenzaprine  
Dextromethorphan  
Fentanyl  
Meperidine  
Phenylpropanolamine  
Propoxephene  
Pseudoephedrine  
Tramadol

Methadone  
Morphine  
Tapentadol  
Triptans

# Frequently Asked Questions

- ◆ Holistic/Homeopathic remedies to address side effects of PD medications?
  - ◆ Clinical Trials vs Anecdotal Evidence
  - ◆ What side effects can we talk about?
    - ◆ Drying (dry mouth, dry eyes, constipation) - artificial tears or saliva producing mouth rinses/lozenges can be used. Increased water intake or fiber for constipation
    - ◆ GI: nausea, constipation - for nausea, hard mint or ginger candies, small sips of cola or ginger ale



# Final Thoughts

- ◆ Don't hesitate to check with your doctor or pharmacist if you have concerns about your medications... that's what we're here for
- ◆ Be careful what you read on the internet
- ◆ You are your own best advocate
- ◆ At the end of the day, every patient is different and there are no "cookie cutter" approaches to therapy

# The Scary Part for Me

◆ Questions?

# Thank You

- ◆ Thank you all so much for having me today!
- ◆ Deep River Drug, 336-454-3784