Managing Medications for Better Health Outcomes

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Outline



- Parkinson Disease (PD) Medications
 - How they work, side effects, interactions
 - New medications
- Treatment of Levodopa-unresponsive Symptoms
 - Ongoing Research
- Alternative / Natural Treatment Options
- Taking Control of Your Disease

Motor Symptoms



Bradykinesia:
 Slowness and smallness of movement

Rigidity: Increased tone

• Tremor: Resting tremor



Non-Motor Symptoms





How is PD Treated?



• First line:

- Exercise
- Nutrition



- Rest and relaxation, stress management
- Rehabilitation therapies (PT, OT, Speech)
- Mental health counseling
- Education (support groups, Regional and National Groups, online resources)

Management of Motor Symptoms



 No therapies currently available to reverse or slow down the progression of PD.

Goal:

- Reduce severity of symptoms
- Maintain independence
- Improve your quality of life!

Types of Medications Available



- Dopamine Replacement
- Dopamine Mimic
- Extending Agents
- Rescue Medications
- Other



Medications

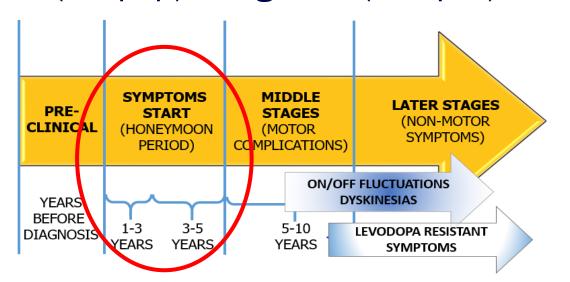


Dopamine replacement:

Carbidopa/levodopa preparations: Sinemet, Sinemet
 CR or SA, Sinemet ER (Rytary)

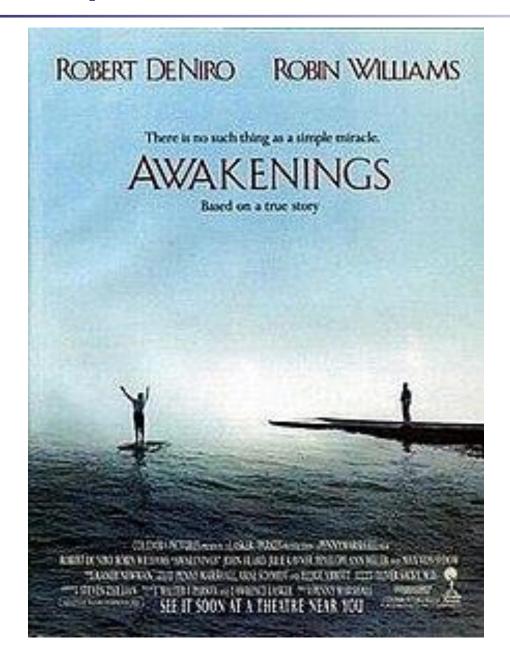
Dopamine mimic:

Dopamine agonists: pramipexole (Mirapex),
 ropinirole (Requip), rotigotine (Neupro)



Dopamine Replacement





Dopamine Replacement



Carbidopa-Levodopa (Sinemet)

 Controlled release (Sinemet CR or SA), longacting (Rytary), pump (Duopa), oral disintegrating tablet (Parcopa)

– Common Side Effects:

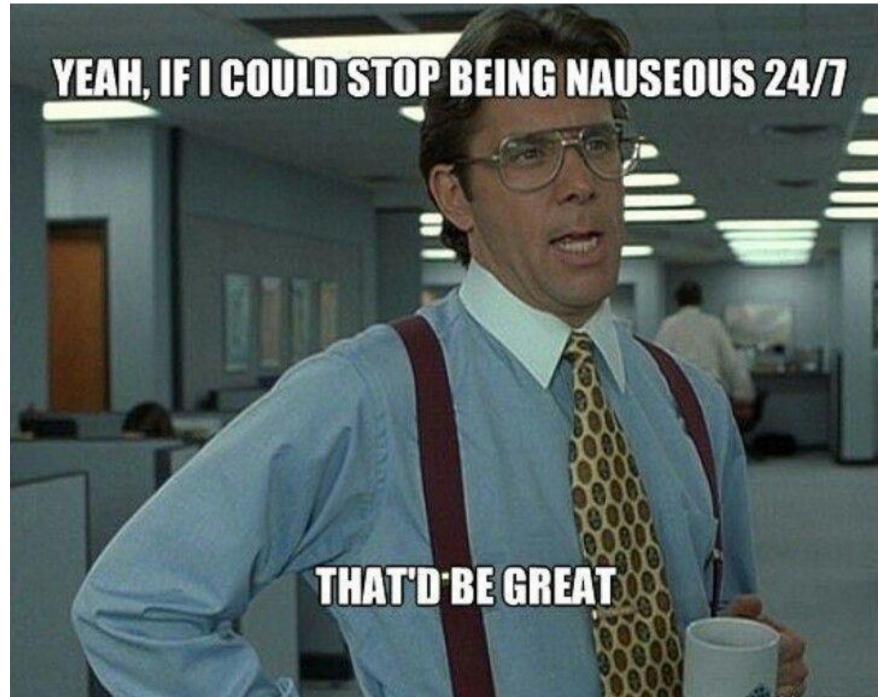
 Nausea / loss of appetite, daytime sleepiness, lightheadedness when standing, constipation

Dopamine Replacement



How to use this medication:

- -3+ times per day.
- Should be given 30-60 minutes before or 90 minutes after high meals
- As the disease progresses, medication doses will increase and become more frequent.



Dopamine Mimic



Dopamine Agonists:

- Pramipexole (Mirapex, Mirapex ER)
- Ropinirole (Requip, Requip XL)
- Rotigotine (Neupro)

-Side effects:

 Like Sinemet + peripheral edema, excessive daytime sleepiness, sleep attacks, impulse control disorders

Impulse Control Disorders (ICD)





Which Medication is Best???

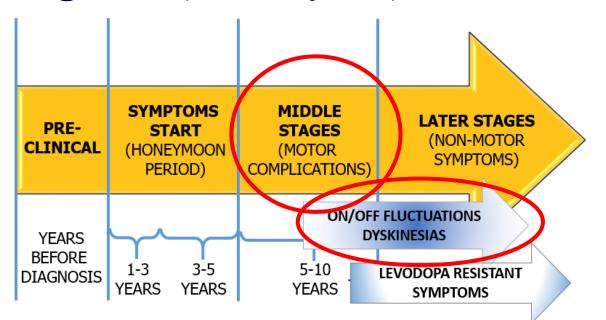




Medications



- Extending Agents: stop the breakdown of dopamine
 - MAOB-inhibitors (rasagiline, selegiline, safinamide)
 - COMT-inhibitors (entacapone, opicapone)
 - A2a Antagonists (istradefylline)

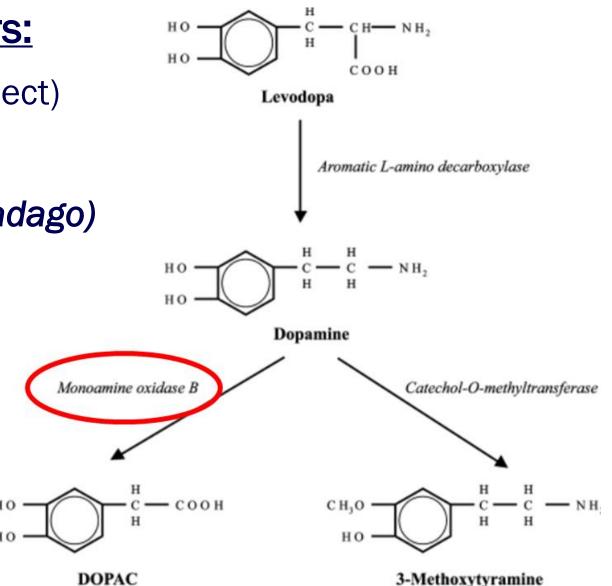


Dopamine Extenders



MAO-B Inhibitors:

- Rasagiline (Azilect)
- Selegiline
- Safinamide (Xadago)



Serotonin Syndrome



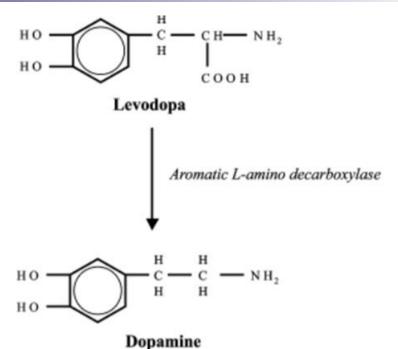


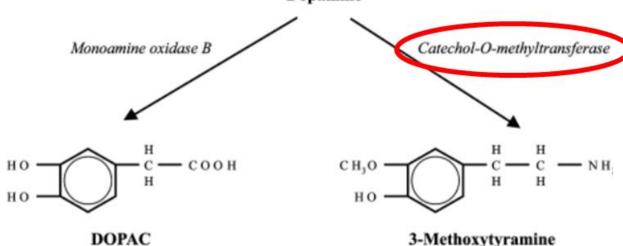
Dopamine Extenders



COMT Inhibitors:

- Entacapone
- Carbidopa-levodopaentacapone (Stalevo)
- Opicapone (Ongentys)





Dopamine Extenders



- Istradefylline (Nourianz)
 - Action: Alpha-2a Antagonist

- Side Effects:
 - Like levodopa (nausea, constipation, dizziness), dyskinesia, hallucinations, and insomnia

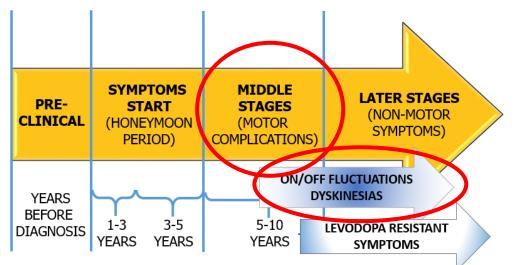
– How to use it?

Rescue Medications



Rescue Medications:

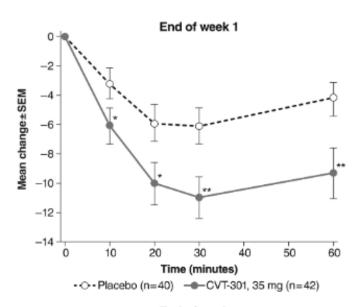
- Chew carbidopa-levodopa, drink tab dissolved in juice
- Inhaled levodopa (Inbrija)
- Subcutaneous apomorphine (Apokyn)
- Sublingual apomorphine (Kynmobi)

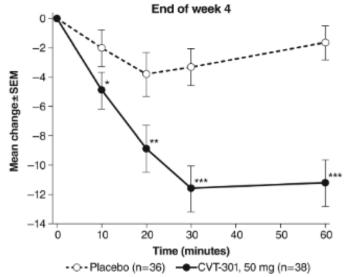


Inhaled Levodopa (Inbrija)



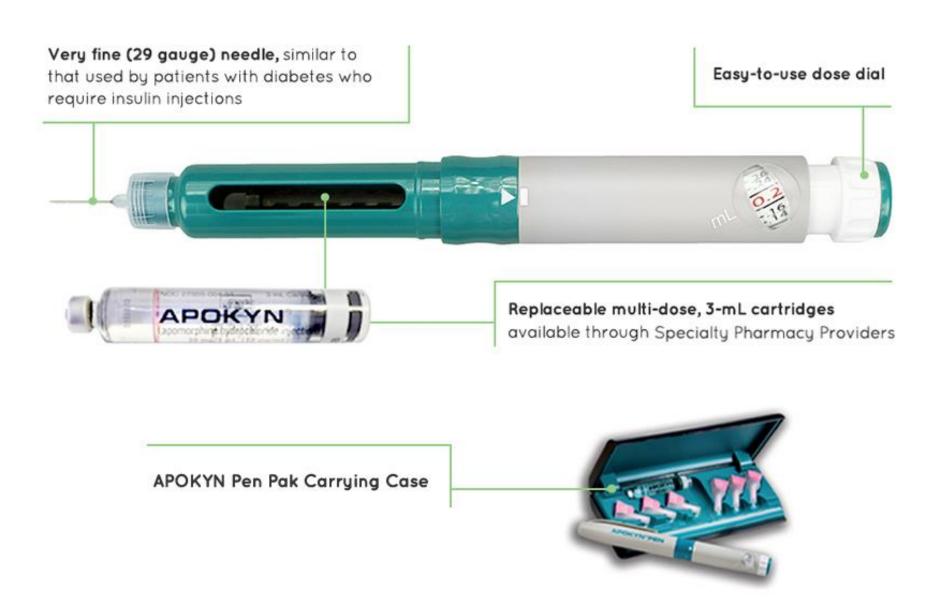






Subcutaneous Apomorphine (Apokyn)





Sublingual Apomorphine (Kynmobi)



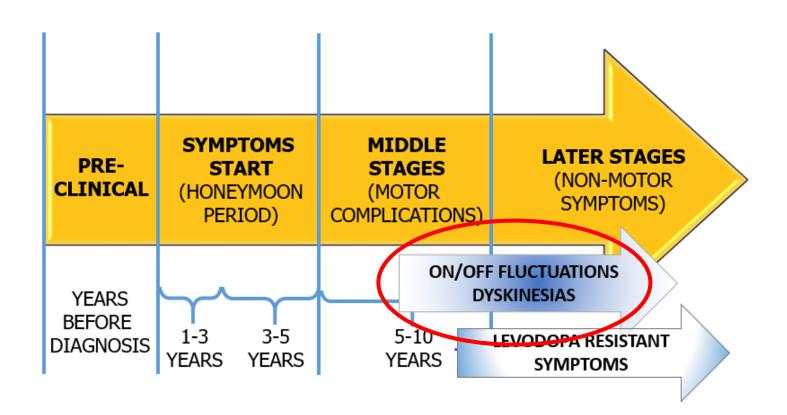


Medications



Dyskinesias:

Amantadine (regular amantadine, amantadine ER)



Dyskinesia



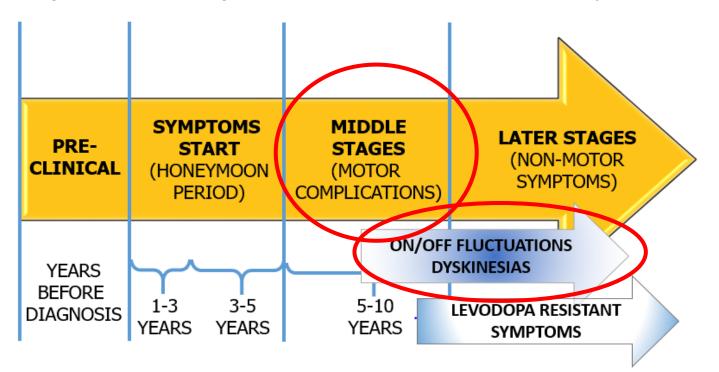
- Amantadine (Symmetrel), Amantadine ER (Gocovri, Osmolex ER)
 - Side effects: Confusion, difficulty concentrating, irritability, depression and SI, worsen/cause hallucinations, leg swelling, livedo reticularis (rash), trouble sleeping, loss of appetite, dizziness/lightheadedness, ICDs.

— How To

Surgery

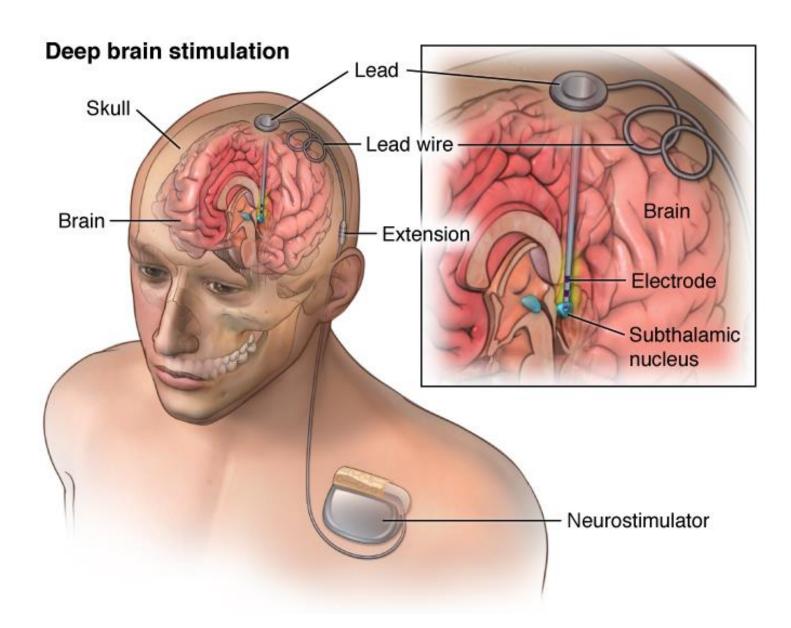


- Deep Brain Stimulation (DBS)
- Pallidotomy / Thalamotomy
 - Focused Ultrasound
- Levodopa-Carbidopa Gastrointestinal Gel (LCGI, Duopa)



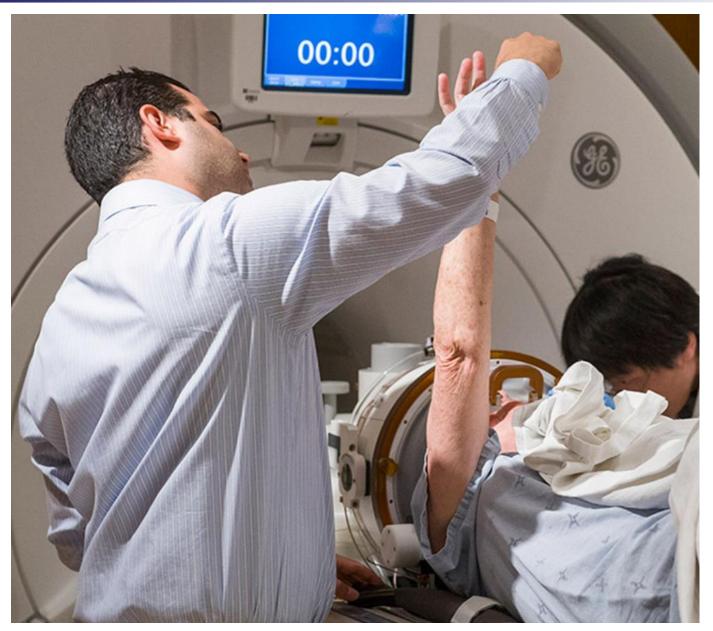
Deep Brain Stimulation





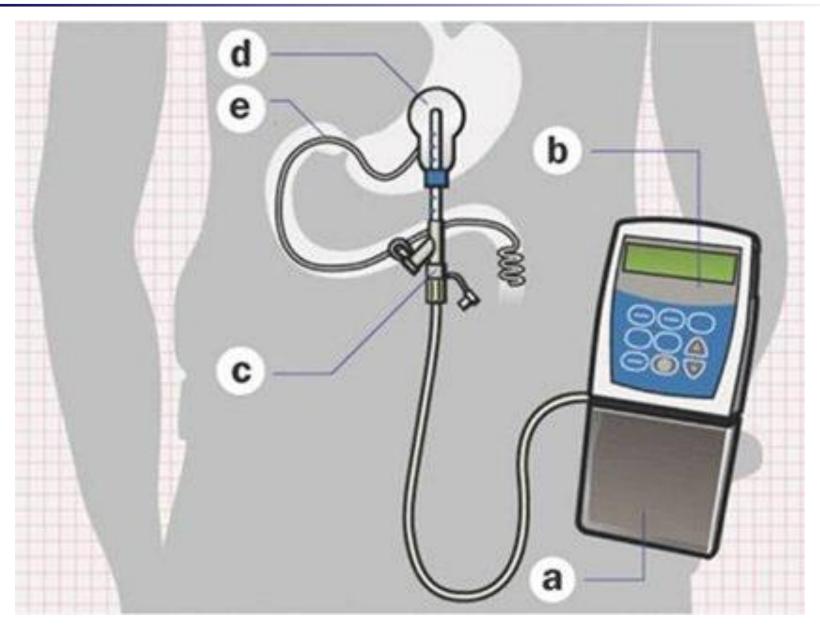
Focused Ultrasound Therapy





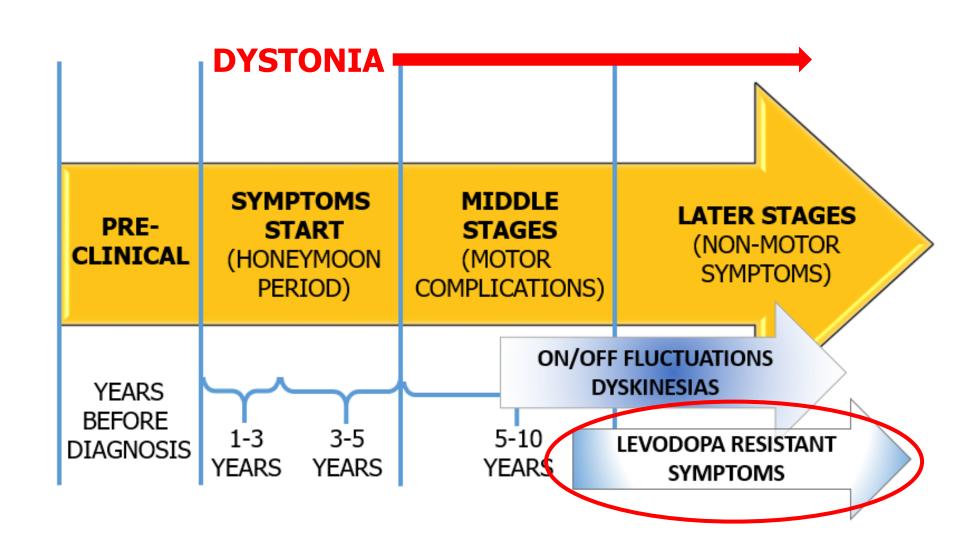
LCGI (Duopa)





Treatment of Other PD Symptoms





Dystonia



Trihexyphenidyl (Artane)

Side effects: dry eyes,
 blurred vision, dry
 mouth, difficulty
 urinating, constipation,
 confusion,
 hallucinations



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Dystonia



Botulinum toxin
 (Botox, Xeomin,
 Myobloc, Dysport)

Side effects: Muscle weakness



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Freezing of Gait & Postural Instability





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Freezing of Gait & Postural Instability



- Therapy
- Adaptive Equipment
- Safety Evaluation and Home Modification



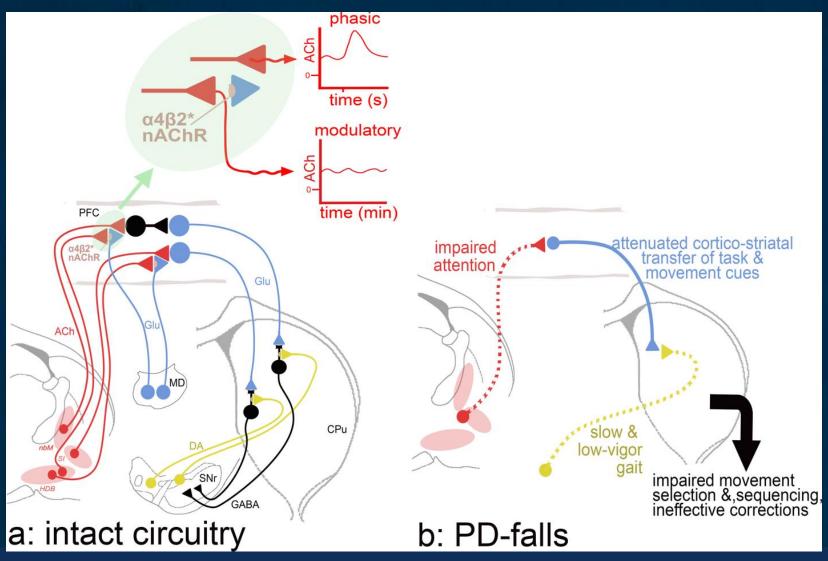


Cholinergic Mechanisms of Attentional-Motor Integration and Gait Dysfunction in Parkinson Disease

Walking is Thinking

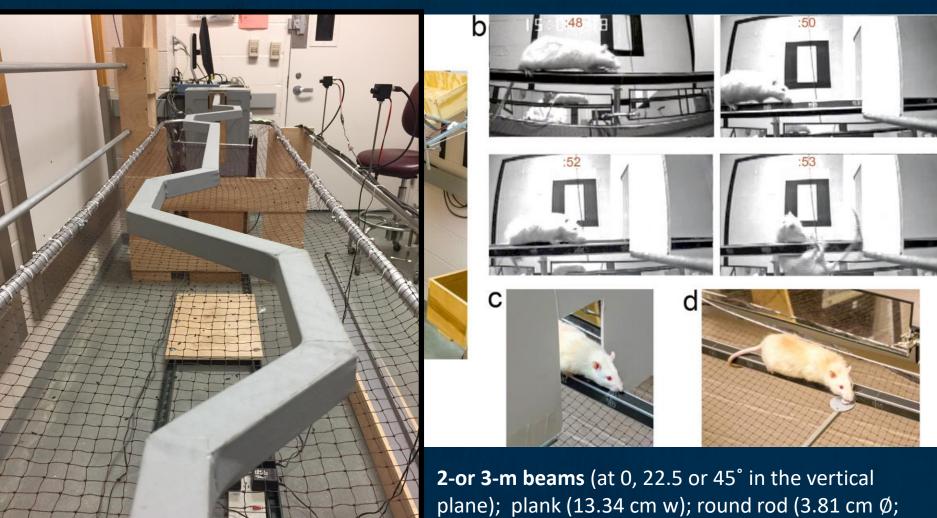


A Model of Falling in PD





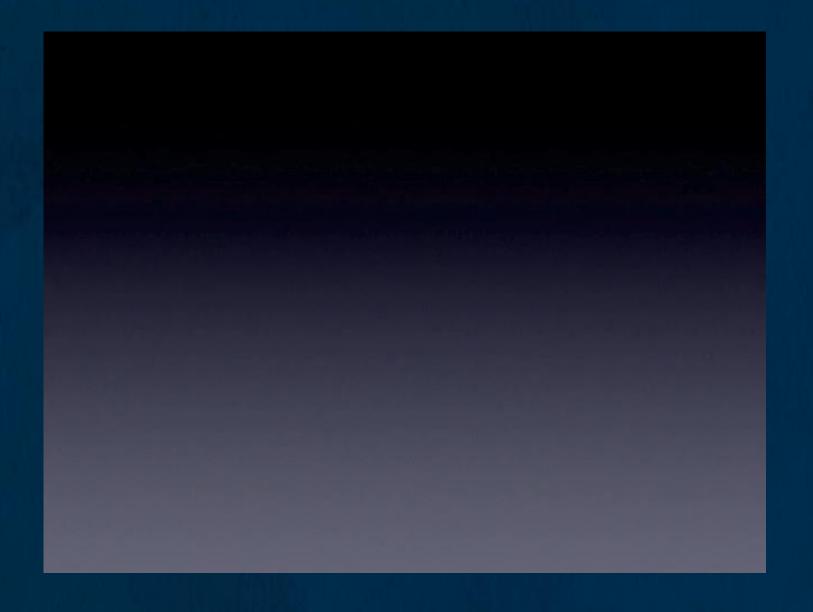
Michigan Complex Motor Control Test (MCMCT)



2-or 3-m beams (at 0, 22.5 or 45° in the vertical plane); plank (13.34 cm w); round rod (3.81 cm Ø; rotating at 0-10 rpm); square rod (2.54 cm side length; 0-10 rpm); zig-zag beam



UDALL CENTER OF EXCELLENCE FOR PARKINSON'S DISEASE RESEARCH



Distraction via Froot Loop

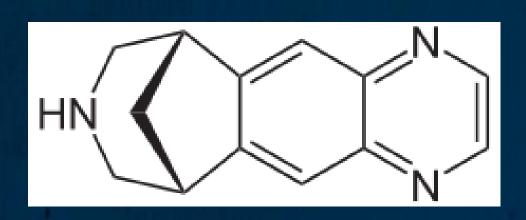


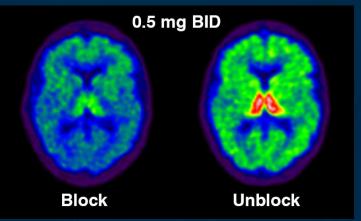
Distraction via Froot Loop

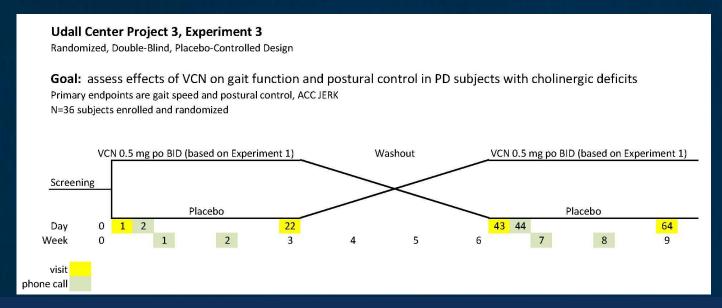


Varenicline Target Engagement Study: Albin et al., Ann Neurol. 2021;90:130-142





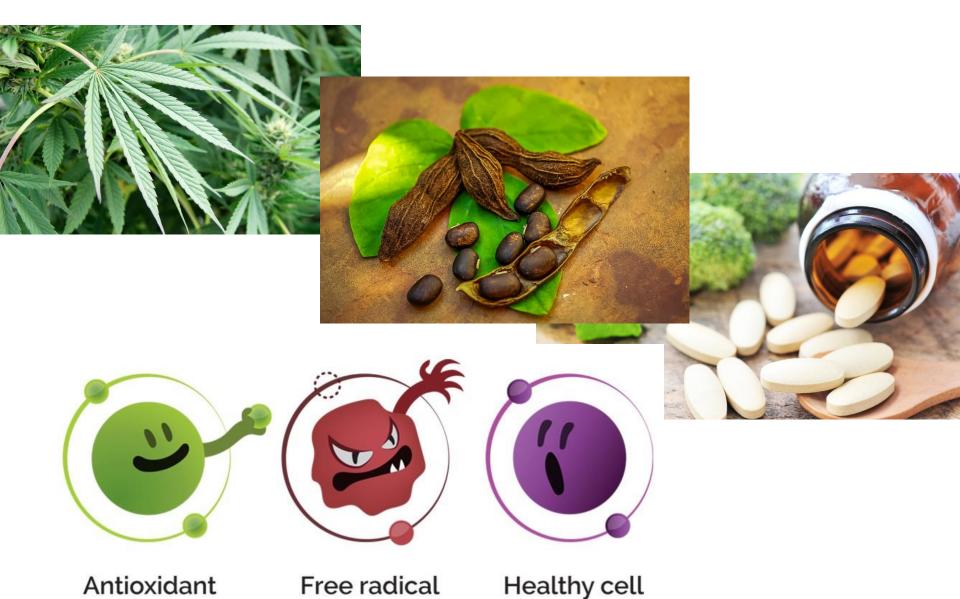






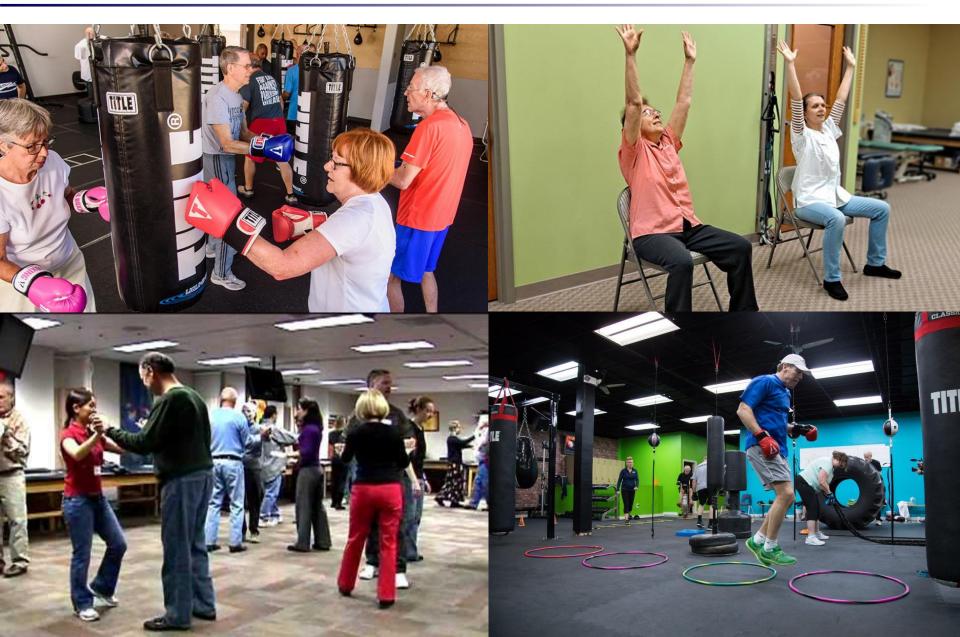
Alternative & Natural Therapies





EXERCISE, EXERCISE, EXERCISE!!!









Sleep



Sleep Hygiene!

- Be consistent
- Sleep in a cool, dark room
- NO electronics in bed!
- Avoid naps
- Identify what wakes you up

Try Melatonin



Take control!

Medications 101



- What if my symptoms aren't responding?
 - Know which symptoms respond and which don't.

Dopamine Responsive Symptoms



PD Medication WILL Treat: Bradykinesia, Rigidity

- PD Medications MAY Treat:
 - Walking and balance issues early in the disease
 - Dystonia
 - Resting tremor
 - Dyskinesia

- PD Medications DO NOT Treat:
 - Walking and balance problems later in the disease

Medications 101



What if my symptoms aren't responding?

- Know which symptoms respond and which don't.
- Check that you are taking your pills at the correct time of day.
- Discuss taking higher doses with your provider.
- Referral to a movement disorders specialist may be needed.

Timing is Everything!



Carbidopa-Levodopa (Sinemet)

- Medications should be given at the times prescribed by the physician.
- If doses are missed, they should be given as soon as this is recognized and not skipped.

Dopamine Agonists

- Immediate release: Give missing medications as soon as it is identified that it was missed.
- Extended release: take it the next time it is scheduled.

Timing is Everything!



Extending Agents

- MAO-B and COMT inhibitors: give missing medication as soon as identified.
- Istradefylline: Wait until the next day

Amantadine

- Regular release: Give missing medications as soon as it is identified that it was missed.
- Extended Release (Gocovri, Osmolex ER): skip missed doses, and administer as prescribed the next day.

Preparing for Your Visit



Before your visit:

- Write down your questions
- Track your symptoms (benefits and side effects)
- Read about new treatment options to discuss

Day of the Visit:

- Bring an updated copy of your medications and supplements
- Be honest with your doctor

Summary



 There are <u>MANY</u> options for the treatment of the motor symptoms of PD.

 While some symptoms don't respond to levodopa, we are looking for new therapies.

 There are many things that you can do to take control of your disease, never give up!

Thank you for your attention!

