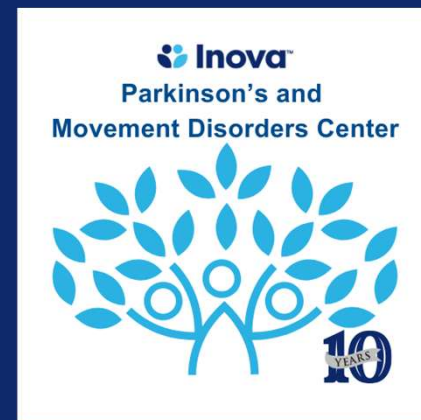


Inova Parkinson's and Movement Disorders Center (IPMDC)

Speaker: Drew Falconer, MD, FAAN

Movement Disorders Specialist
IPMDC Medical Director



Thank you to our Annual Sponsors!



Annandale



THE LANDING
THE PROVIDENCE
THE TRILLIUM



Inova Parkinson's and Movement Disorders Center



A comprehensive, integrated center for contemporary evidence-based and patient-centered care in northern Virginia and beyond.

Our experienced team includes fellowship-trained specialists in neurology and neurosurgery and offers the highest level of advanced care for these complex conditions.

A Great Team!

[Inova.org/move](https://www.inova.org/move)

Movement Disorders Specialists



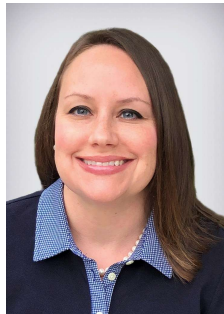
Drew Falconer, MD
Medical Director, IPMDC



Sean Rogers, MD, PhD
Medical Director,
Memory Disorders



David Whitney, MD



Abigail Lawler, MD
IPMDC Autonomics
Director



Mick Reedy, MD

Also nursing
specialists:
Kelsey, Mayra,
Eunice, Sara



Emmi Scott, PhD
Neuropsychologist
Functional Movement
Disorders (FND)



Sonia Gow
Center coordinator



Jenn Pauldurai, MD
Cognitive & behavioral neurologist

The best way to communicate with our team?

Please use MyChart to communicate with specialists

- More direct, secure, and faster than phone calls





Neurosciences

Parkinson's and Movement Disorders Center (IPMDC)

Alexandria

1500 N. Beauregard St.
#300
Alexandria, VA 22311

Fairfax

8081 Innovation Park Dr.
#900
Fairfax, VA 22031

Fair Oaks

3620 Joseph Siewick Dr.
#400
Fairfax, VA 22033

Gainesville

7051 Heathcote Village Way
#230
Gainesville, VA 20155

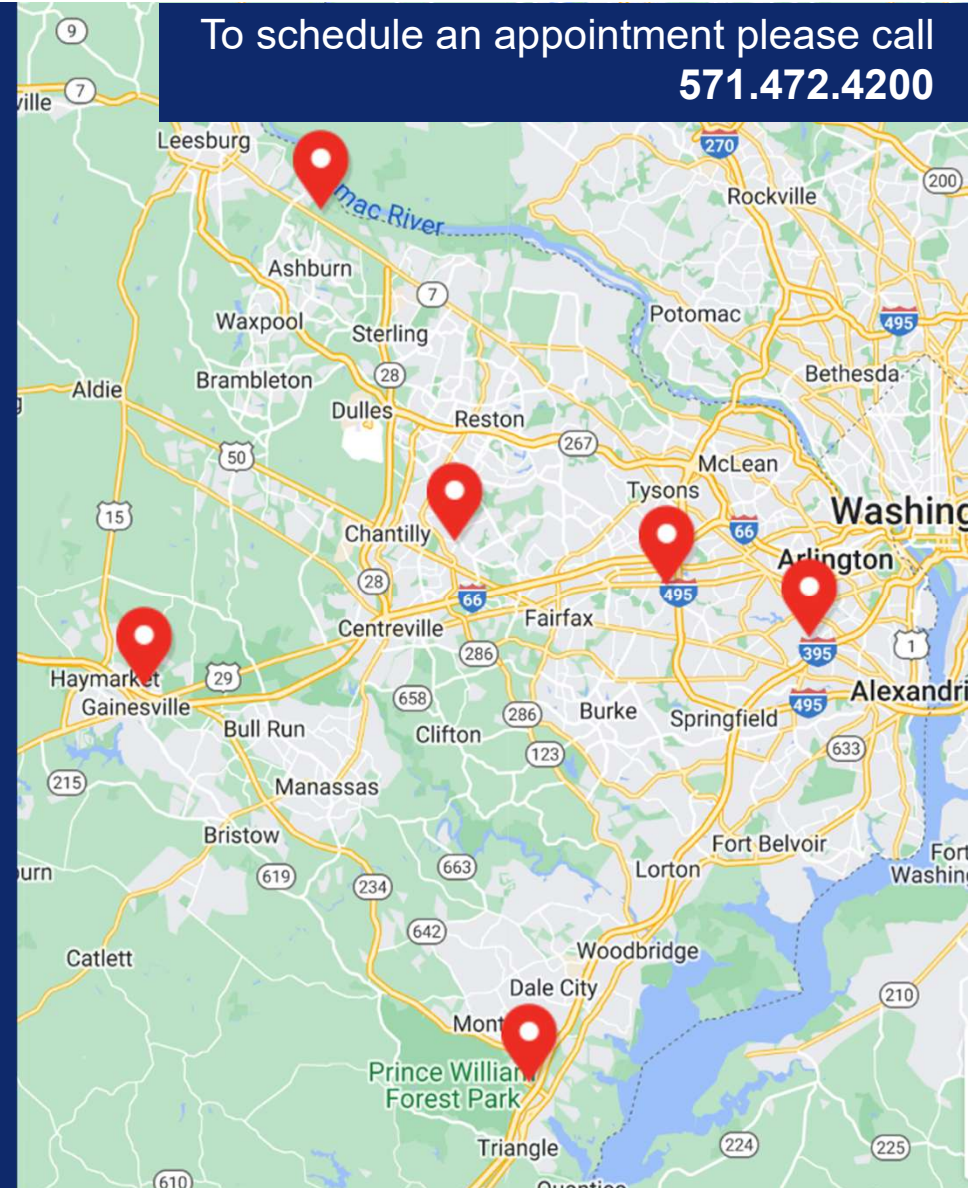
Leesburg

44055 Riverside Parkway
#110
Leesburg, VA 20176

Dumfries

3800 Fettle Park
#312
Dumfries, VA 22025

To schedule an appointment please call
571.472.4200



Within Inova

Clinical

- Therapy – PT/OT/Speech, Parkinson experts
- Mental health - Neuropsychology, Neuropsychiatry
- Neurosurgery – Deep Brain Stimulation (DBS)
- Movement Disorders Neurologist Hospitalist
- Research

Over 110 regular programs each month.

In-person

- Parkinson Friends
- Dance for PD
- UpENDING Parkinson's (climbing)
- Boxing/Strength
- High Intensity Interval Training
- Yoga
- Dual Task (Stand Tall, Speak Loud)
- Therapy classes – exercise, communication, Brain Choir
- Improv for Movement & Memory

Online

- Dual Task for Parkinson's
- Zumba Gold for Parkinson's
- Voice Speech Communication
- Exercise Rx
- Parkinson's Journey
- Let's Chat About Thinking
- Healthy Eating
- Live a simpler, safer, less cluttered life.

About Our Programs

[IPMDC.org](https://www.ipmdc.org)

Meet our program partners in the Atrium!

- Online, and in-person at multiple locations throughout northern Virginia
- Educational, exercise/wellness and social/supportive
- Feature Parkinson and community experts
- IPMDC programs are open to anyone with Parkinson's, their families, and friends
 - Not limited to Inova patients
- Educational programs for allied health professionals in senior living

Resources

Available
through
ipmdc.org

- E-newsletter
- Calendar
- ipmdc.org is a living document and updated almost daily.
 - Resources
 - Libraries of recordings of our programs and online specialist presentations
 - Patient Assistance – including **IPMDC Patient Care Kit**
 - PD 101
 - Online and in-person programs

While the right medications and treatments for each person are key to living well with Parkinson's, the other part of the equation, just as important as clinical care, is the lifestyle choices that people can make.

Patients are
people too.

Donate

[IPMDC.org/donate](https://ipmdc.org/donate)



IPMDC programs are offered at no cost thanks to the generosity of our community.

Your gifts of gratitude to the **Inova Parkinson's and Movement Disorders Center**, stay in our community to directly benefit Parkinson patients, their families and friends.

Inova is a nonprofit community organization.

Advancements in Parkinson's Treatment

What is Parkinson's?



Simply a chemical deficiency!

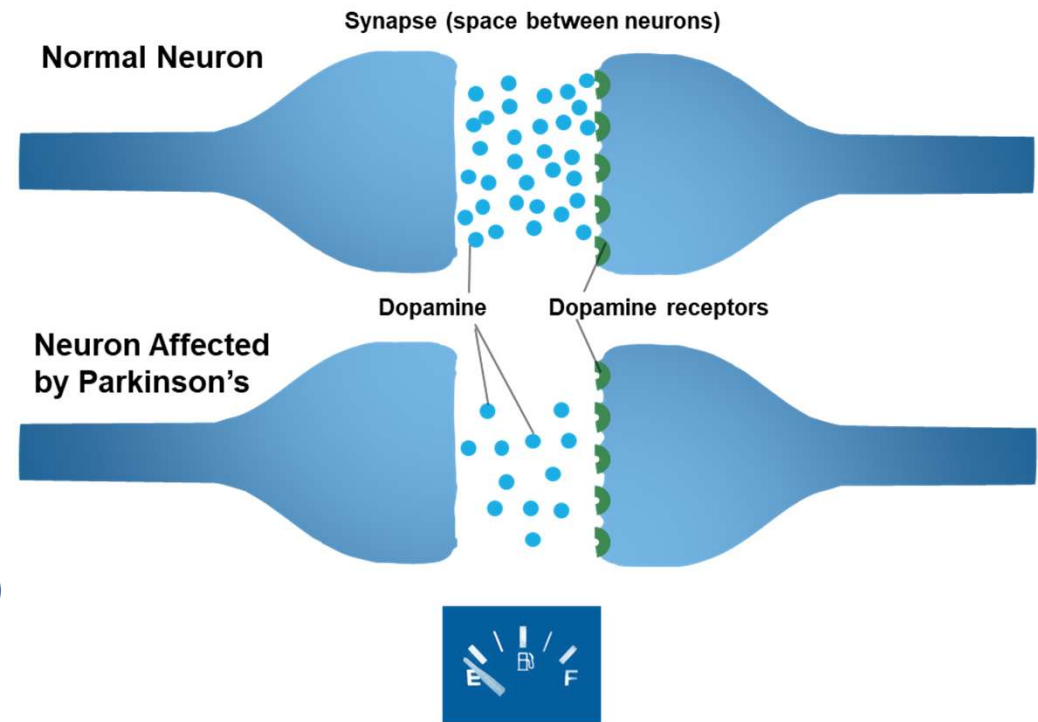
The Cause?

Genetics

- Classically NOT inherited

Environmental factors

- Pesticides including Agent Orange
- Well water
- Heavy metal exposure
- Chemical exposure
- Head injury (pugilistic Parkinson's)



How do we diagnose Parkinson's?

- Symptoms/History/Exam

**When I walk down the hallway and back,
how does the doctor know I have Parkinson's?*

- + Response to Medications
- DaTscan, Syn-One Skin Biopsy
- “Parkinsonism” is not a diagnosis

Life expectancy is the same as someone without Parkinson's if adequately treated.

What happens if you have reduced dopamine?

Motor and Non-motor Symptoms

Systems which function inappropriately due to reduction in Dopamine or one of its byproducts

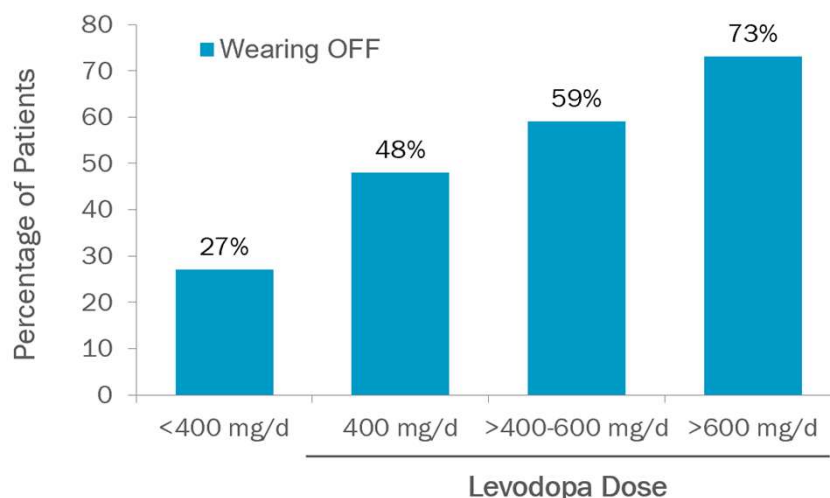
Motor Symptoms

- Resting tremor
- Tremor with position
- Bradykinesia (slowness)
- Rigidity (stiffness)
- Slow walking, shuffle, reduced arm swing
- Balance issues
- Reduced facial expression
- Speech changes (hypophonia)



Off time is the enemy

- Prevalence of ~25–50% within a period of 2–6 years of initiating carbidopa/levodopa treatment^{1,2}
- In a single-visit pilot study of 151 patients with PD on stable doses of levodopa for ≥4 weeks, 64% reported experiencing motor fluctuations³



Online survey of 3,000+

70% reported 2+ Off episodes a day.

65% reported 2 or more hours a day

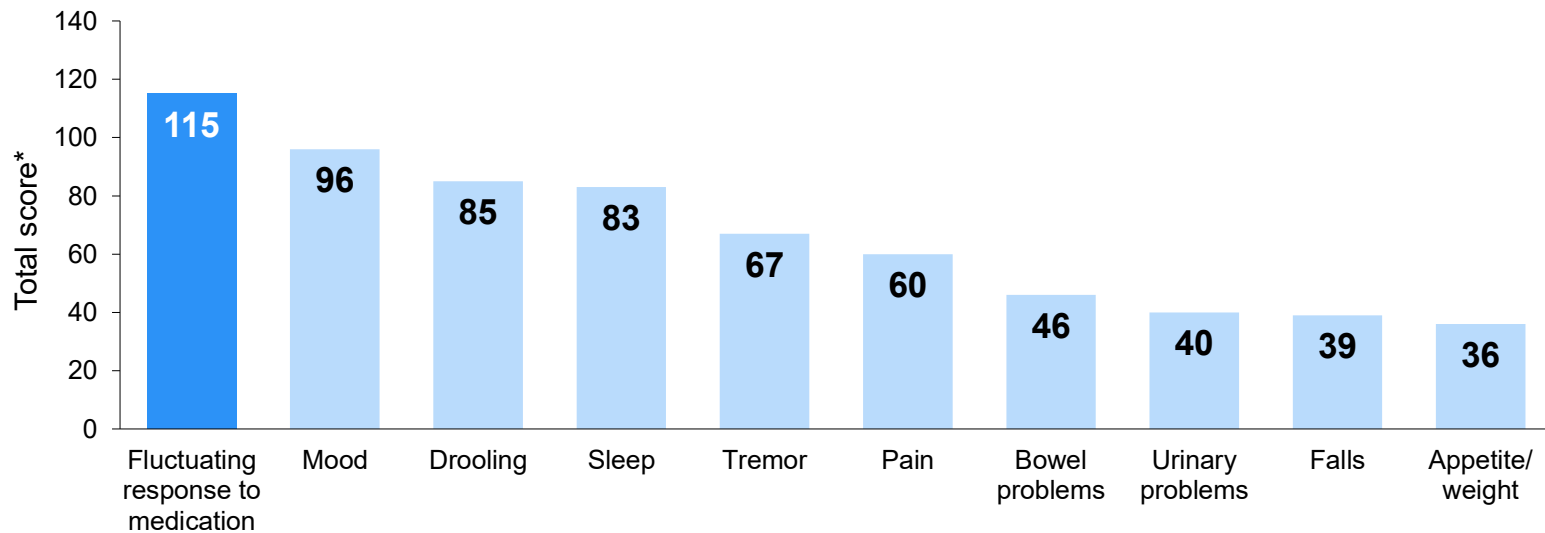
50% – moderate/severe, affected daily activities

1. Chou KL, et al. *Parkinsonism Relat Disord.* 2018;51:9-16. 2. Ahlskog JE, et al. *Mov Disord.* 2001;16:448-458. 3. Stocchi F, et al. *Eur J Neurol.* 2019;26:821-826.

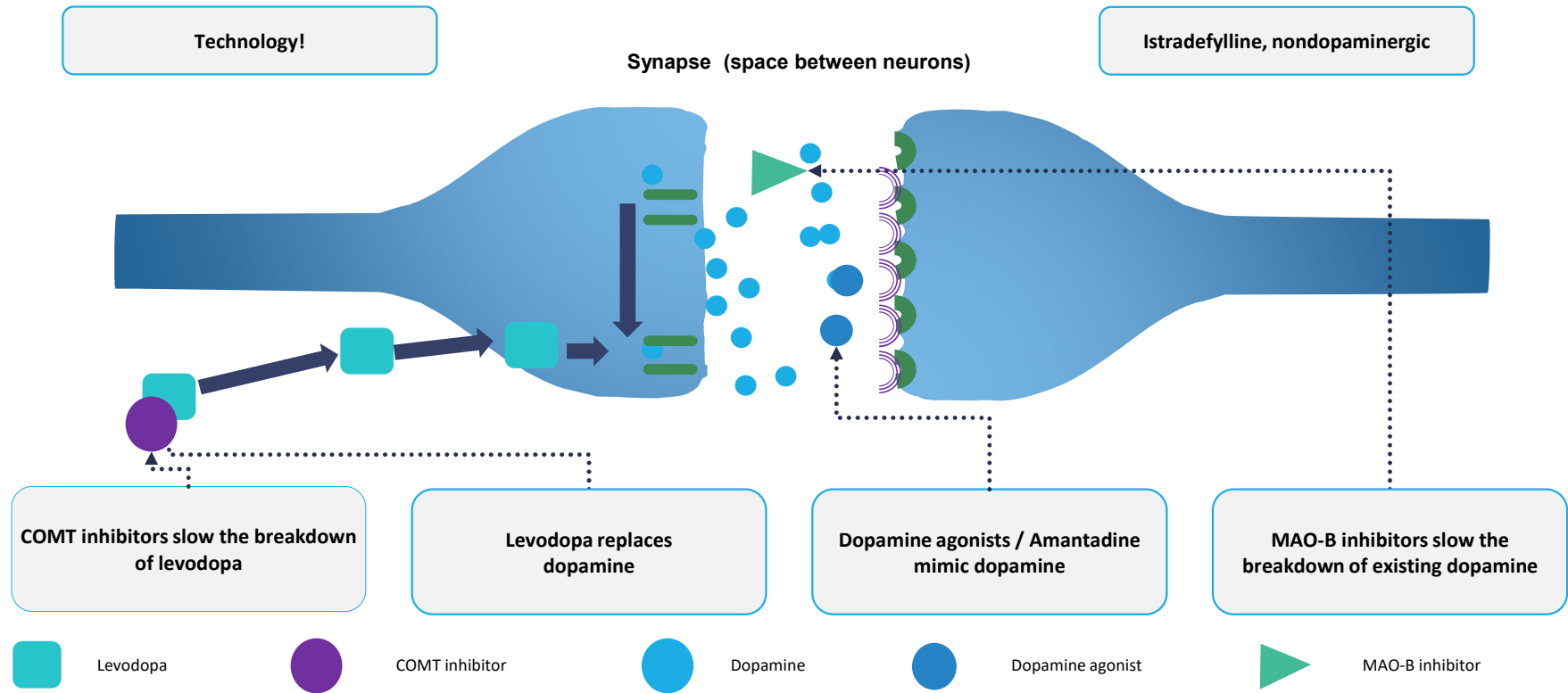
Mantri S, Lepore M, Edison B, Daeschler M, Kopil CM, Marras C, Chahine LM. The Experience of OFF Periods in Parkinson's Disease: Descriptions, Triggers, and Alleviating Factors. *J Patient Cent Res Rev.* 2021 Jul 19;8(3):232-238. doi: 10.17294/2330-0698.1836. PMID: 34322575; Stamford et al. Off-Park Survey Steering Group. *J Parkinsons Dis* 2015;5(3)533-539.

Not just off time, but fluctuations

Ranking of most bothersome PD-related symptoms experienced by patients with more than 6 years disease duration (N=173)



Different avenues of treatment



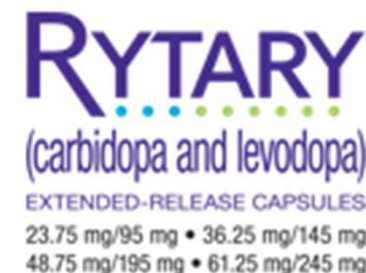
COMT = catechol-O-methyltransferase.
MAO-B = monoamine oxidase-B.

Kalia LV et al. *Lancet*. 2015;386:896–912

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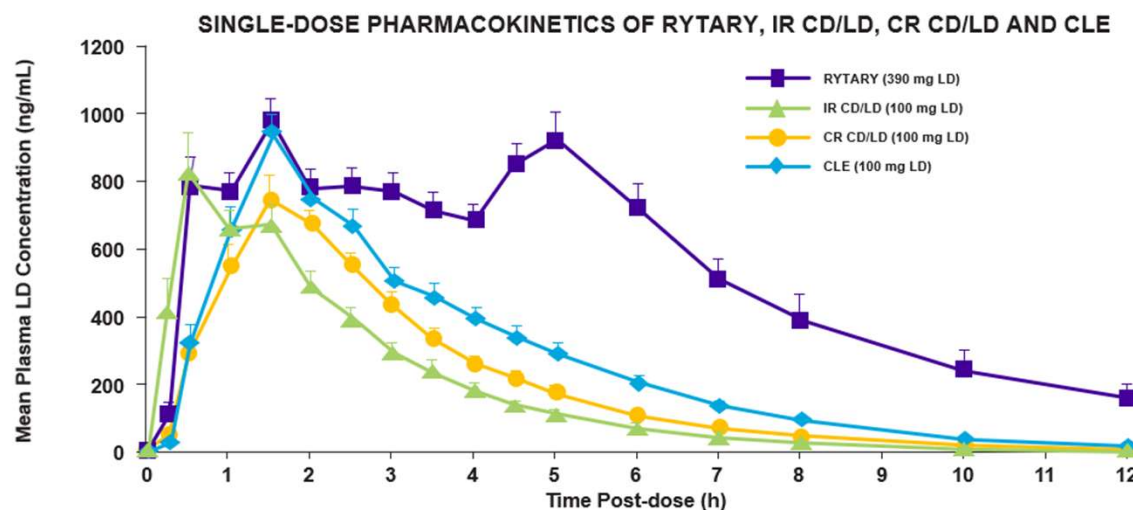
Longer lasting carbidopa/levodopa 2015

Rytary™ (carbidopa/levodopa) Amneal



History of evolution
of levodopa delivery ----->

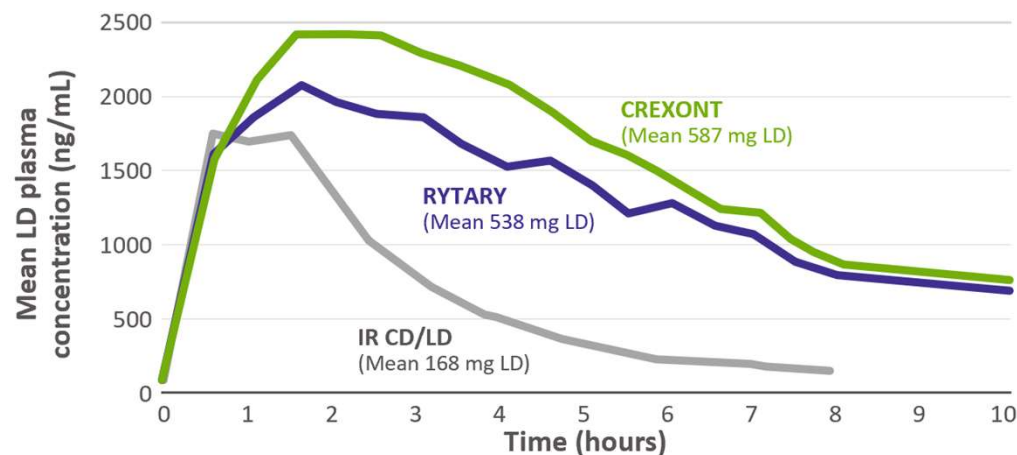
- Equivalent dose of Rytary on average 1.2 more hours of “on time” compared to IR.



Longer lasting carbidopa/levodopa 2025

Crexont™ (carbidopa/levodopa) Amneal

- Capsule/bead formula.
- Adhesive polymer.
- 4.8 hrs above 50% Cmax, 3x daily (avg)
- 1.6 hr longer on time per dose (avg)

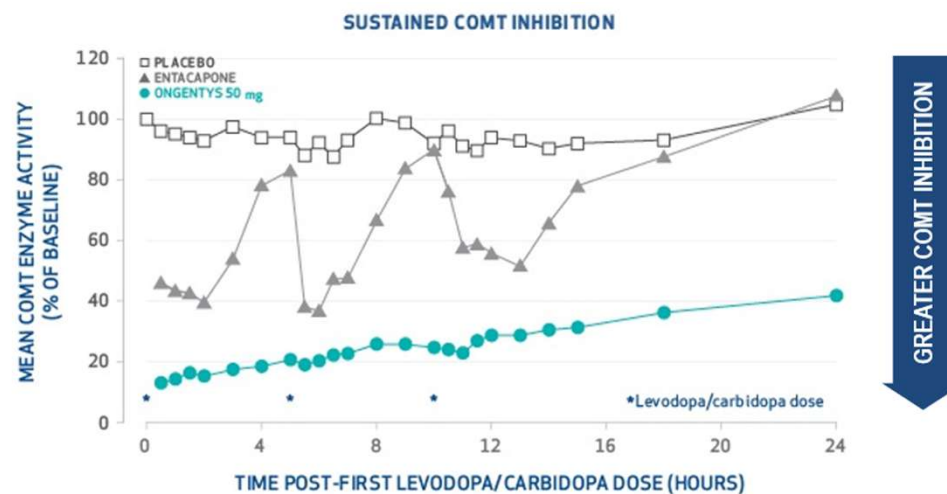


1. Hauser RA et al. *JAMA Neurol.* 2023;80(10):1062-1069.

Maximizing levodopa

Ongentys™ (opicapone) Amneal

- 1x daily peripheral COMT inhibitor
- Significant boost in levodopa availability.
- 1.95 improvement in off time, $\Delta 1.01$ hr



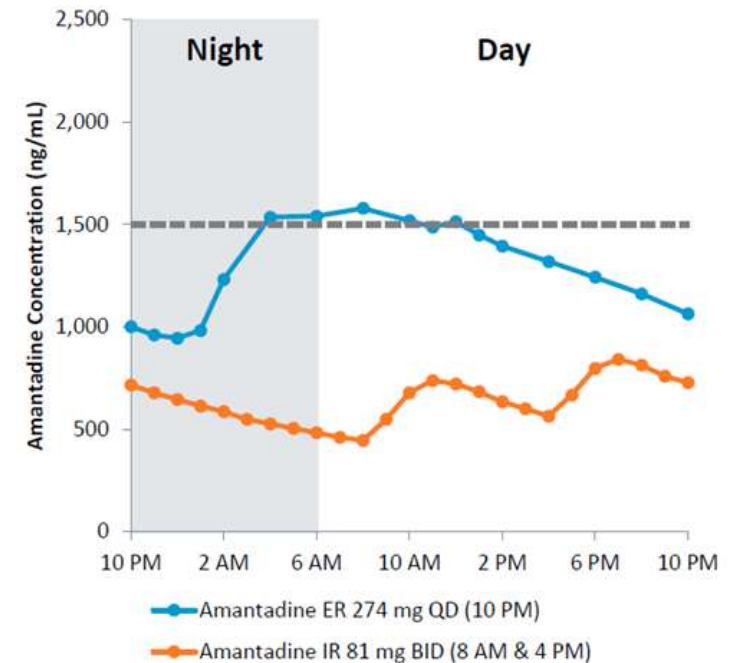
Amantadine, off time + dyskinesia control **GOCOVRI**®

(amantadine) extended release capsules

Gocovri™ (amantadine ER)

Supernus

- 1x daily delayed release, extended release.
- Dyskinesia AND Off Time
- 41% reduction in dyskinesia, 21% reduction in off time (avg) – 45% more good ON time daily.



Non-dopaminergic approach

Nourianz™ (istradefylline)

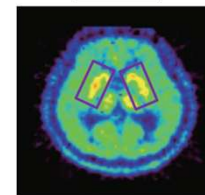


Indicated as adjunctive treatment to levodopa in adult patients with Parkinson's disease (PD) experiencing wearing off phenomena.

- Indirect pathway – adenosine A_{2a} receptor antagonist
- Addition reduced levodopa dose escalation over 37 weeks¹ and 72 months²
- Effective in tremor dominant and postural instability and gait difficulty subtypes (*post hoc*)³.

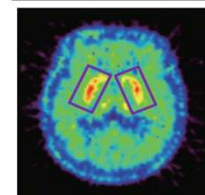
A_{2a} Receptor PET imaging¹

Normal



Increase in A_{2a} Receptors with PD progression¹

Parkinson's Disease



1.Hatano T et al. Impact of Istradefylline on Levodopa Dose Escalation in Parkinson's Disease: ISTRA ADJUST PD Study, a Multicenter, Open-Label, Randomized, Parallel-Group Controlled Study. *Neurol Ther.* 2024 Apr;13(2):323-338.

2.Hattori N et al. Real-world evidence on levodopa dose escalation in patients with Parkinson's disease treated with istradefylline. *PLoS One.* 2023 Dec 22;18(12):e0269969

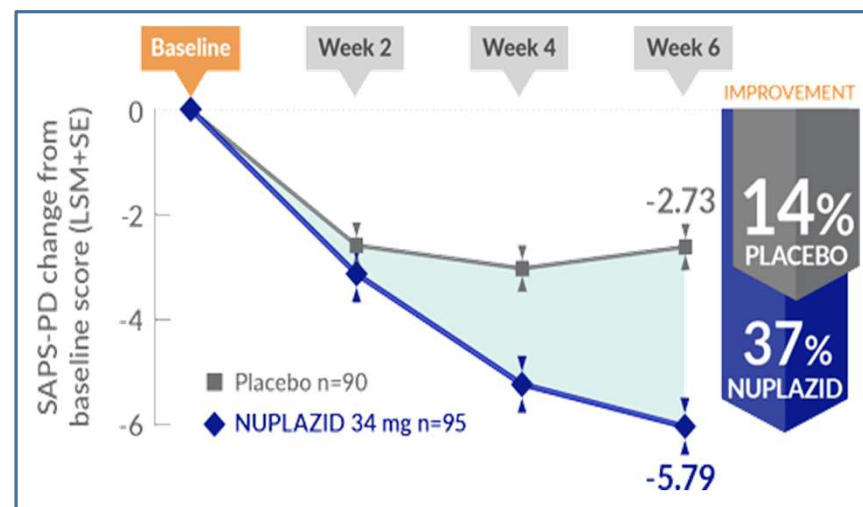
3.Torres-Yaghi et al. Istradefylline effects on tremor dominance (TD) and postural instability and gait difficulty (PIGD). *Clin Park Relat Disord.* 2023 Oct 14;9:100224.

Hallucinations and Psychosis

Nuplazid™ (Pimavanserin) Acadia

- First antipsychotic medication specifically designed for hallucinations and 'psychosis' associated with Parkinson's Dementia and Lewy Body Dementia.
- Serotonin Agonist with no impact on dopamine receptors
- + SAPS-PD improvement with no change in UPDRS
- More effective when prescribed sooner, when hallucinations are beginning.

NUPLAZID™
(pimavanserin) tablets



Technology – Foslevodopa Pump

Vyalev™ (foscarnidopa/foslevodopa)

Abbvie

- 24 hour subq foslevodopa pump
- 2.72 hr increased ON time
- 83% waking in the ON state, reduced sleep disturbance (36%)
- Replaces oral levodopa



Pahwa R, Soileau MJ, Standaert DG, et al. Rapid onset of good ON-time and improvement in motor-state stability in aPD patients after treatment with continuous subcutaneous foslevodopa/foscarnidopa. Poster presented at: The International Congress of Parkinson's Disease and Movement Disorders (MDS); September 15-18, 2022; Madrid, Spain.

Hauser RA, Bergmans B, Malaty I, et al. Effects of continuous subcutaneous infusion of foslevodopa/foscarnidopa on sleep dysfunction in people with Parkinson's.

Poster presented at: The American Academy of Neurology 76th Annual Meeting (AAN); April 13-18, 2024; Denver, CO

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Technology – Apomorphine Pump

Onapgo™ (apomorphine infusion) Supernus

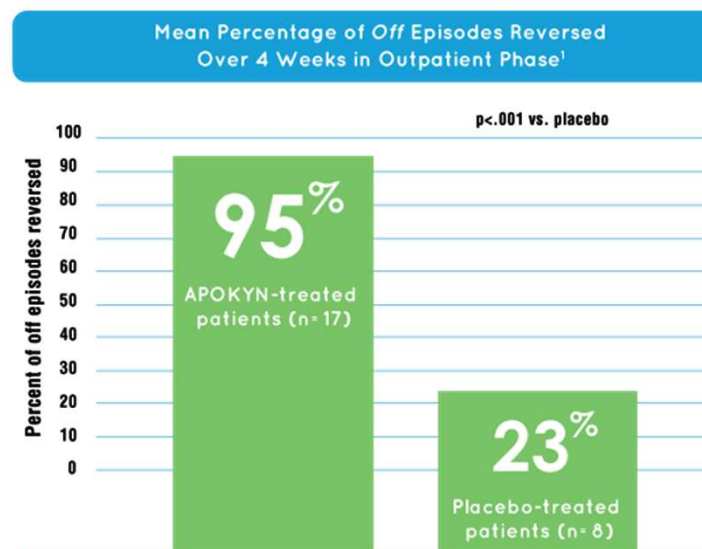
- Add on subq pump during waking hours
- 2.8+ hr increased ON time
- Added in addition to foundational oral therapies



Rescue Option #1 - Apokyn

Apokyn™ (apomorphine injection)

- Rapid onset Dopamine Agonist via injection
- For different types of OFF episodes:
 - Rapid off, wearing off
 - Dose failure / unexpected off
 - Delayed on
 - First AM symptoms or exercise intolerance
- Achieve ON within 10-20 minutes



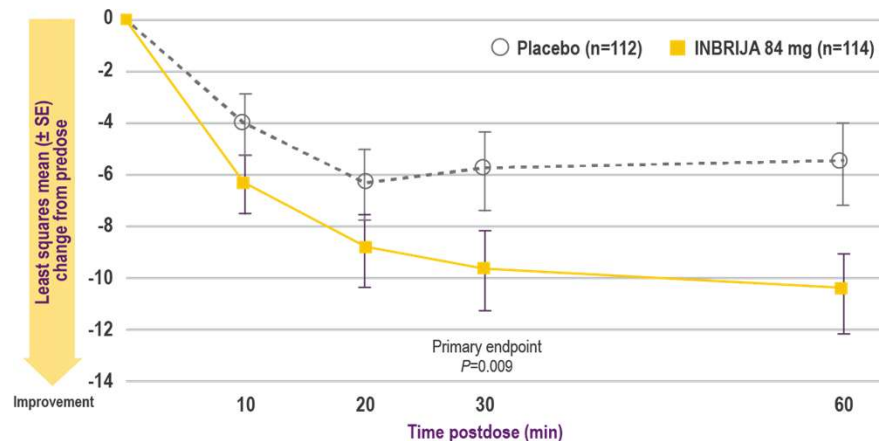
Rescue Option #2 - Inbrija



Inbrija™ (levodopa inhalation powder)

- Rapid onset levodopa through inhaler
- For different types of OFF episodes:
 - Rapid off, wearing off
 - Dose failure / unexpected off
 - Delayed on
 - First AM symptoms or exercise intolerance
- Achieve ON within 10 minutes, can take up to 5x daily

UPDRS Part III Score Change From 0-60 Minutes Postdose at Week 12



Timing of Medications

- Very little flexibility in scheduling
- 4 hours means 4 hours apart
- Look for lower limit of the window (i.e., No closer than 4 hours apart)
- Timing of protein and meals with meds



Contraindicated medications

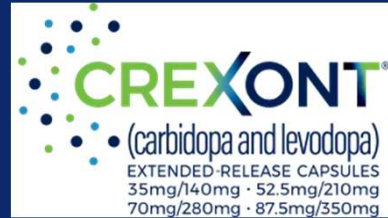
AVOID:

- **haloperidol (Haldol™)**
and most neuroleptics
- prochlorperazine (Compazine),
metoclopramide (Reglan),
promethazine (Phenergan)
droperidol (Inapsine)
- Commonly prescribed opioid medications are contraindicated with selective MAO B inhibitors such as rasagiline (Azilect), selegiline (l-deprenyl, Eldepryl), and selegiline HCL oral disintegrating (Zelapar)

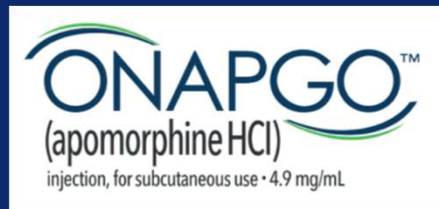
Additional information at:
www.ipmdc.org/hospital

CONSIDERED SAFE:

- pimavanserin (Nuplazid)
quetiapine (Seroquel)
clozapine (Clozaril)
- trimethobenzamide (Tigan)
ondansetron (Zofran)



New toolbox and growing



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Parkinson's and Movement Disorders Center



Dopamine Agonist

Carbidopa/Levodopa formulation



MAOB inhibitor

COMT inhibitor



A2a agonists

Amantadine derivatives



Rescue Therapies



What about when the medicines 'stop working'?



Longer acting
medicines



Complimentary
medicines



Targeted
Technologies

Targeted Technology, NOT “Advanced Treatments”

- Botulinum toxin injections
- Vyalev and Onapgo - Subcutaneous Pump
- Deep Brain Stimulation
- Focused Ultrasound



Living well with Parkinson's

The right medications

+

Challenging Exercise



Eating well

Reducing stress

Getting enough sleep

Staying mentally active

Social interaction

R_x PRESCRIPTION

NAME _____ AGE _____
ADDRESS _____ DATE _____

**Aerobic
Strength
Balance, Agility, and
Dual Task
Flexibility**

SIGNATURE

LABEL

REFILL 0 1 2 3 4 5 PRN



Neurosciences

Parkinson's and Movement Disorders Center

Contact Us!

To schedule an appointment

please call **571.472.4200**

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Sonia Gow

Program and Community Care Manager

Inova Parkinson's & Movement Disorders
Center

Sonia.Gow@inova.org | (703) 375-9987

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www.ipmdc.org – programs and resources

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