



Barbara Rinehart

# SLIDE PRESENTATIONS NEUROLOGY: PARKINSON'S DISEASE

My responsibilities were:

- Interviewed physician presenter
- Researched and annotated topic
- Developed content, including tables & graphs
- Provided graphic suggestions

## Levodopa Overview

Standard therapy since 1960s<sup>1</sup>

- Effective for motor symptoms of PD

Complex pharmacokinetics

- Converts to dopamine
- Relatively rapid onset
- T<sub>1/2</sub> = 90 minutes

May be co-administered with COMT inhibitors

Short half-life may contribute to wearing-off

Highly dependent on dopamine receptor

## The Therapeutic Window with Levodopa Narrows as Disease Progresses

- The optimal dose of levodopa **increases** as PD progresses<sup>1,2</sup>
- Motor complications of therapy, such as dyskinesias and on-off fluctuations, correlate with levodopa dose<sup>2-4</sup>

## Additional Reading

### Spanish Version of Patient Card

Martinez-Martin P, Tolosa E, Hernandez R, Barin X. The patient card questionnaire to identify wearing-off in Parkinson's disease. *Clin Neuropharmacol* 2007;30(5):264-275.

### Managing the Wearing-Off Syndrome

Mohamed E, Jor J, Gassner R. Managing the wearing-off syndrome. *J Am Med Assoc* 2006;296:777-782.

Stacy MA, Stacy T, Fahn S, et al. Wearing-off in Parkinson's disease. *Neurology* 2004;62:1000-1005.

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## IDENTIFYING WEARING-OFF IN LEVODOPA-TREATED PARKINSON'S DISEASE PATIENTS

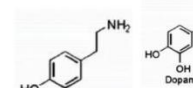
"Develop a tool to facilitate recognition of the full range of the signs and symptoms of wearing-off."

"I just reviewed the slide set, and think it is great. I have been making slides on this topic for years, and this one is better. I have no changes."

Mark A. Stacy, MD  
Associate Professor Neurology  
Duke University School of Medicine

## Etiology of Wearing Off

Reduced Levels of Dopamine in the Brain



## Patient Screening Tool: WOQ-9: 9-item Questionnaire

SYMPTOM	COLUMN A: Episodes symptoms		COLUMN B: Usually improves after the onset of Parkinson's medication	
	Yes	No	Yes	No
1. Tremor (eg. shaking of hands, arms, or legs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Any slowness of movement (eg. walking, sitting, or standing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Mood changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Any stiffness (eg. rigidity of arms or legs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Painstaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Reduced dexterity (eg. difficulty buttoning or writing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Cloudy or dull thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Anxiety/panic attacks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Muscle cramping (eg. arms, legs, or feet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Clinical Tool: WOQ-

## Prevalence of Levodopa-Induced Motor Complications at ≥ 5 Years

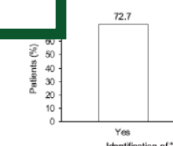
	Mean (%)	Range (%)	Studies (#)	Ref
1. Tremor	34.5	10-50	10	1
2. Slowness	42.3	10-60	10	1
3. Stiffness	38.2	10-50	10	1
4. Pain				
5. Anxiety				
6. Muscle cramping				
7. Dull thinking				
8. Panic attacks				
9. Bladder difficulty				
10. Tiredness				

## Prototype Tool: WOQ-32: Symptom List

Motor and Non-motor Symptoms of Wearing-Off

- |                                      |                            |
|--------------------------------------|----------------------------|
| <b>Motor</b>                         | <b>Non-motor</b>           |
| 1 Tremor                             | 18 Anxiety                 |
| 2 Slowness                           | 19 Mood changes            |
| 3 Slowness in the early morning      | 20 Humbleness              |
| 4 Slowness during the night          | 21 Cloudy/muddled thinking |
| 5 Slowness of movement               | 22 Abdominal discomfort    |
| 6 Stiffness in the afternoon         | 23 Chest discomfort        |
| 7 Stiffness in the early morning     | 24 Hot/cold intolerance    |
| 8 Stiffness in the night             | 25 Pain                    |
| 9 General stiffness                  | 26 Aching                  |
| 10 Muscle cramping                   | 27 Slowness of thinking    |
| 11 Difficulty getting out of a chair | 28 Panic attacks           |
| 12 Weakness                          | 29 Sweating                |
| 13 Problems with balance             | 30 Restlessness            |
| 14. See Revised/Deleted              | 31 Bladder difficulty      |
|                                      | 32 Tiredness               |

## Screening Tool: WOQ-9



## Further Characterization of Wearing-off

Typical pattern of wearing-off during the day

