OFF Episodes in Parkinson's Disease

As PD Progresses, OFF Episodes May Emerge and Can Become More Frequent

As disease progresses and with long-term levodopa treatment, people with PD may develop motor complications; motor fluctuations and/or dyskinesia^{1,2}

Motor fluctuations consist of periods of ON and OFF episodes³



Occurs when levodopa is providing its typical benefit and symptoms are controlled3



OFF Episodes

Are characterized by the reappearance and/or worsening of motor symptoms and/or nonmotor symptoms4

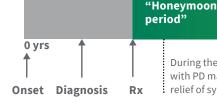
Frequency of OFF Episodes

Motor fluctuations, including OFF episodes, occur in:









Motor complication period

During the honeymoon period, many people

symptoms

~8 yrs

~15 yrs

~20 yrs

with PD may experience nearly complete relief of symptoms with therapy

Symptoms and disease progression vary widely⁵

Contributors to Daily OFF Time⁶



Time to ON4 (Delayed ON, no ON)

May occur throughout the day and is the result of a levodopa dose having a delayed effect (delayed ON) or no effect (no ON)



Wearing OFF4

Occurs when a previous levodopa dose is no longer working



Unpredictable OFF^{4,7}

A random and abrupt transition from ON to OFF that may happen unrelated to the timing of levodopa doses

Despite advancements in therapy and optimization of current treatment strategies, OFF episodes continue to occur in patients with PD8-10

Epidemiology

1 Million Member Plan Epidemiology Model Analysis for OFF Episodes*

Commercial		Medicare Part D
1,000,000	Total lives in plan	1,000,000
x 62%	Proportion of age-applicable lives ¹¹	x 100%
620,000	Plan lives within age of onset for PD	1,000,000
x.1%	Proportion diagnosed with PD ^{3,12}	x 1.2%
620	PD lives	12,000
x 75%	Proportion of patients with PD treated with levodopa ¹¹	x 75%
465	Patients likely to experience OFF episodes	9,000
x 50%	Proportion of patients with PD treated with levodopa and likely to experience OFF episodes ⁴	x 50%
233	Estimated total OFF episodes lives at plan	4,500
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^{*}Sunovion model analysis

References: 1. Verhagen Metman L. Recognition and treatment of response fluctuations in Parkinson's disease; review article, Amino Acids, 2002;23(1-3):141-145, 2. Marsden CD et al. In: Marsden CD, Fahn S, eds. Neurology, Vol 2, Oxford, UK: Butterworth-Heinemann; 1981:96-122. 3. Olanow CW, Stern MB, Sethi K. The scientific and clinical basis for the treatment of Parkinson disease: What have we learned over 40 years? Parkinsonism Relat Disord. 2018;51:916. 5. Fahn S et al. Principles and Practice of Movement Disorders. 2nd ed. Philadelphia, PA: WB Saunders; 2011. 6. Metman LV. Amino Acids. 2002;23(13):141-145. 7. Adler CH. Relevance of motor complications in Parkinson's disease. Neurology. 2002;58(4 suppl 1):S51-S56. 8. Onozawa R, Tsugawa J, Tsuboi Y, Fukae J, Mishima T, Fujioka S. The impact of early morning off in Parkinson's disease on patient quality of life and caregiver burden. J Neurol Sci. 2016;364:1-5. 9. Obering CD, Chen JJ, Swope DM. Update on apomorphine for the rapid treatment of hypomobility ("Off") episodes in Parkinson's disease. Pharmacotherapy. 2006;26(6):840-852. 10. Merims D, Djaldetti R, Melamed E. Waiting for ON: a major problem in patients with Parkinson disease and ON/OFF motor fluctuations. Clin Neuropharmacol. 2003;26(4):196-198. 11. Census Reporter. https://censusreporter.org/data/table/?table=B01001&geo_id=01000US&primary_ge