

BACKGROUND

Parkinson's disease (PD) is a debilitating neurodegenerative disorder that presents in a range of motor symptoms like tremor, bradykinesia (slowing of movement), and joint rigidity. PD symptoms are typically mitigated with medication, but a patient's response to their dosage wanes as their condition progresses, warranting adjustment (Armstrong, 2020). Most patients are only able to see their neurologists for 30 minutes every 3-6 months, and the state of their symptoms during their appointment only provide a narrow snapshot of a their overall condition (Tsamis, 2023). PD patients often receive suboptimal dosing and experience decreased ability to perform normal activities involved in everyday life. This can significantly limit independence, hygiene, and overall quality of life.

1 MILLION

individuals estimated to have PD in the US alone (Yang, 2020)

6 MONTHS

how long the average patient has to wait to see their clinician (Tsamis, 2023)

50%

of patients experience "OFF" periods with significant immobility (Mantri, 2021)

~40%

of patients still have motor issues after 4-6 years of medication (Cilia, 2020)

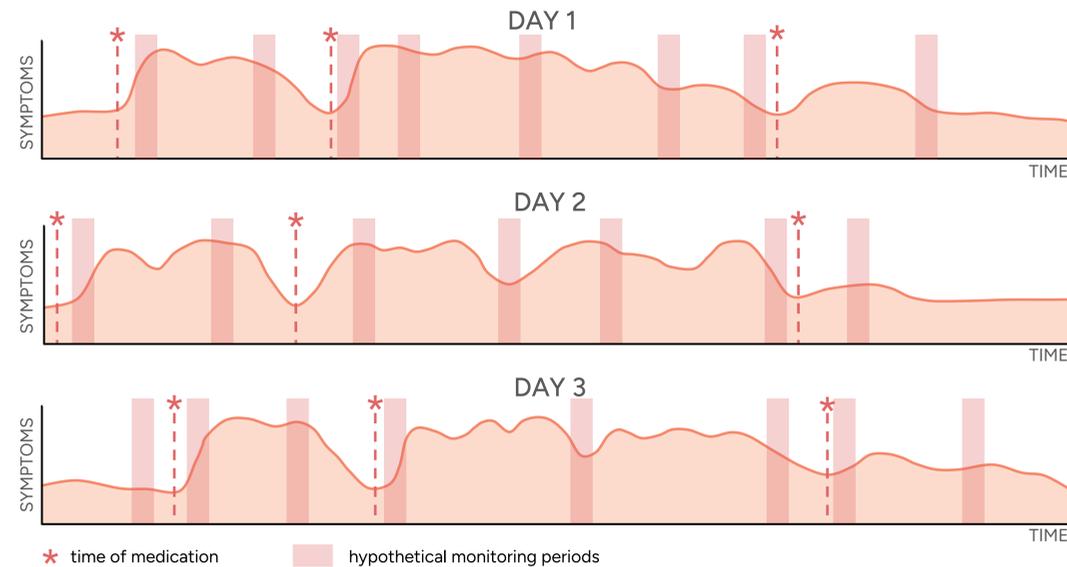
PROBLEM

Neurologists need an objective way to longitudinally monitor at-home bradykinesia in Parkinson's disease patients in order to adjust medication dosage and minimize motor fluctuations.

parkinetics

SOLUTION

Parkinetics is a holistic system that uses inertial measurement units (IMUs) to track bradykinesia in the user's performance of activities of daily living (ADLs) over time.



- 1 tracks metrics of bradykinesia in specific ADLs over time
- 2 wirelessly transmits data to smartphone app on user's phone
- 3 logs time of medication dose and subjective user symptoms
- 4 analyzes trends in motor symptoms and reports to the patient's clinician

By getting a more accurate record of how a patient's bradykinesia levels fluctuate longitudinally, neurologists receive precise insight into when they are experiencing "OFF" periods. This enables the neurologist to adjust medication for improved, more tailored symptom management.

PATIENT JOURNEY



Meet Pete, an 81-year old who has been living with PD and taking medication for his symptoms for the past 4 years.



Pete has started to experience more "OFF" periods where bradykinesia causes Pete to struggle with everyday tasks.



Pete starts using Parkinetics to track his performance in everyday tasks over time.



Pete's neurologist uses the analyzed data to appropriately adjust Pete's medication, helping him relieve his symptoms.

[1] Armstrong, M. J. et al. (2020). Diagnosis and Treatment of Parkinson Disease: A Review. JAMA, 323(6), 548–560. <https://doi.org/10.1001/jama.2019.22360>
 [2] Tsamis, K. I. et al. (2023). A Paradigm Shift in the Management of Patients with Parkinson's Disease. Neuro-degenerative diseases, 23(1-2), 13–19. <https://doi.org/10.1159/000533798>
 [3] Yang, W. et al. (2020). Current and projected future economic burden of Parkinson's disease in the U.S. NPJ Parkinson's disease, 6, 15. <https://doi.org/10.1038/s41531-020-0117-1>

[4] Mantri, S. et al. (2021). The Experience of OFF Periods in Parkinson's Disease: Descriptions, Triggers, and Alleviating Factors. Journal of patient-centered research and reviews, 8(3), 232–238. <https://doi.org/10.17294/2330-0698.1836>
 [5] Cilia, R. et al. (2020). Natural history of motor symptoms in Parkinson's disease and the long-duration response to levodopa. Brain : a journal of neurology, 143(8), 2490–2501. <https://doi.org/10.1093/brain/awaa181>