

# Evaluation of a Digital Therapeutics (DTx) for personalized medication and treatment plan optimization for people with Parkinson's disease

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## Background & Rationale

Globally, disability and death caused by Parkinson's disease are increasing faster than for any other neurological disorder. Available treatments help reduce symptoms, but their fluctuating and highly personal nature makes it challenging to identify and adjust treatment plans. The infrequent contact movement disorder specialists have with PD patients, and their lack of access to longitudinal personalized data on symptom experience patients' visits are bottlenecks in treatment management. PwP also struggle to track and report to their physician the high variability and frequency of symptoms experienced at home, and which leads to delays and biases in treatment adjustment and personalization.

## Objectives

Project Soturi seeks to **"democratize" and expand PwP access to healthcare services**. Soturi's algorithm aims to optimize levodopa-based treatment with the goal of supporting many different types of low-cost consumer-level wearable devices for the collection and detection of motor symptoms. Remote monitoring devices paired with AI algorithms will thus be powerful tools to aid in the identification of patients with advanced PD who could benefit from treatment modifications and enhanced care.

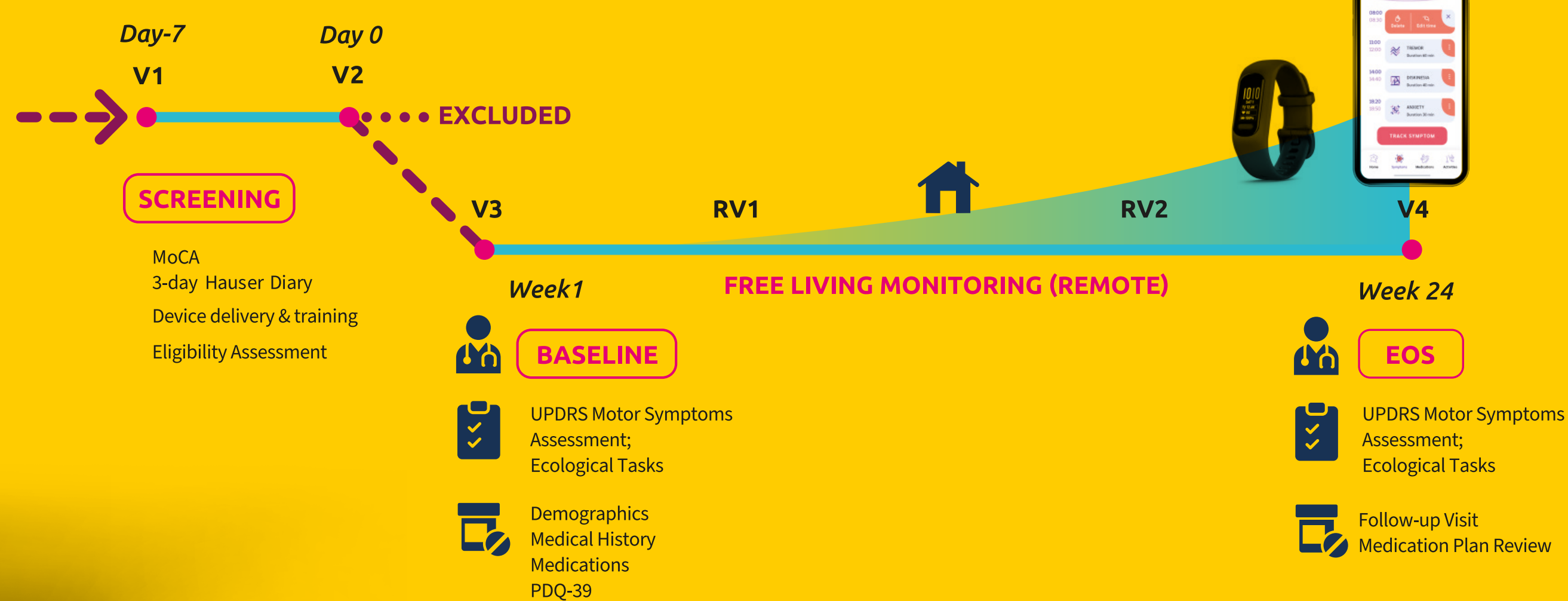
It will demonstrate the clinical efficacy and safety of Digital Therapeutics (DTx) for self-management, personalized medication, and treatment plan optimization for PD, to:

- **Improve wellbeing and daily Quality of Life of PwP by providing specifically designed physical exercises, voice training, and emotional support programs.**
- **Automatically detect a person's motor symptoms** analyzing data from a consumer wearable sensor and Patient Reported Outcomes.
- **Determine the unique digital levodopa pharmacodynamic profile** of a PwP based on the automated symptom detection and actual Standard of Care medication plan.
- **Determine the optimal levodopa regimen suggestions for that individual PwP** by comparing their digital levodopa PD profile against a Population Levodopa PK/PD model by Orion Pharma

## Soturi Mobile App



## Clinical Study



## Methods

This abstract proposes a hybrid project involving community-based **co-design activities with patients and clinicians**, in-clinic assessment for the validation study of the algorithms, and finally a longitudinal observational study to reflect variability of free-living and improve algorithm efficiency. This trial will apply the **IDEAs framework** of designing and testing digital health interventions **to build a patient-physician-facing prototype** of Soturi. Algorithm development will use **explanable A.I.** techniques to explain how the model works, and which are the most important features that drive outcome prediction.

## Tools & Algorithms



## Outcomes

The project will develop a comprehensive digital solution which will contain services for the patients (i.e., medication management, symptoms diary, physical, speech exercises and emotional support) and physicians, including the patients' summaries data; alerts, warning, and insights, displaying meaningful changes in clinical data over the time, and a model for the given medication plan of the individual patient, including estimates of likelihood of OFF symptoms and dyskinesia.

