A service to improve the life of people with **P**arkinson's **D**isease



PDWatch4U is an Apple iOS Application designed to address some of the difficulties encountered by patients with Parkinson's Disease and their medical professionals and caregivers.

It tracks a patient's intake of Parkinson's medications, keeps a database of the patient's symptoms, and maintains a record of physical conditions that impact symptoms and drug effectiveness.

PDWatch4U provides a summary of objective information to the patient's medical provider, allowing data-based assessment of symptoms. The patient's condition is recorded in a self-report using a UPDRS-based rating scale. The user interface is designed for people with Parkinson's.

Examples of the user interface (iPhone and Apple Watch):





The App allows active tracking of symptoms and drugs. It also reminds the patient to take medication and provide a quick rating of the patient's current condition.

The app uses manufacturer's published pharmacokinetic data to calculate the potential effect of Parkinson's drugs. New drugs or new data can be added at any time.

The app accesses the personal health database on the iPhone and leverages the health-related data which is collected by the Apple Watch.



The app can help physicians find answers to the following questions:

* How did the patient respond to the prescribed medication regimen?

Multi-day charts allow analysis of when the patient took pills, what impact this had on a potential demand-curve, and how the patient's symptoms, heartbeat and energy consumption were at this time.



* This example screen illustrates 24 hour estimates of levodopa plasma concentration (light blue) and estimated demand (green) after multi-day use of five daily doses of Rytary 245, 2 pills/dose mixed with doses of Requip. It is overlaid by symptoms (orange/yellow) and pulse (red).





Dashboards for further analysis are available showing detailed data of each day.

They also allow the patient to identify patterns of daily behavior and symptoms.

Dashboards show the impact of schedule changes, the next scheduled medications, symptoms, pulse and energy expenditure.

* What is the patient's average demand for Levodopa?



Demand curves can be defined to help determine the potential need for Levodopa each day.

* How did the patient respond to the prescribed medication regimen?

After having defined a demand curve the physician can define restrictions which best fits the patient's individual needs. For example: "2 pills of Rytary should be taken at 9 am", "always 2 pills doses", "no dose between 1 am and 6 am", etc.

The App then calculates a schedule close to the potential demand curve.

The physician can also manually adjust the doses to create "what if" scenarios and get immediate visual feedback.

The app provides patients with up to date information and reminders of when medication is required/prescribed.









Special chart types provide monthly, weekly or daily overviews. In blue the taken medication and in orange the symptoms. The line width reflects the strength of the symptoms.

Currently in experimental state: **Tremor detection** with the Apple Watch (right side)



Summary

Currently in an exploratory phase, PDWatch4U has the potential to increase the stability of a patient's condition and quality of daily life by fine-tuning the administration of available formulations of levodopa. Most testing to date has focused on IPX066 (Rytary) and an immediate release form of carbidopa - levodopa (Sinemet), but other drug formulations can be easily accommodated.

PDWatch4U can potentially:

Provide a convenient, accessible data integration platform to facilitate analysis of relationships between drug administration, patient response, and symptom measurements.

Enable a patient to create an ongoing, data-based record of symptoms and medication efficacy using widely recognized measurement scales and biometrics - for the patient's medical providers, for use between appointments and during face-to-face meetings.

Provide data to the physician to help determine an optimum medication program, based on apparent demand, while observing restrictions such as maximum daily dose and adjusting drug administration to take into account the impact of food, exercise, stress, and other variables.

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