By continuously monitoring a patient's gait speed, an in-home wireless system can assess the condition's severity between visits to the doctor's office. | Photo source N.Fuller, SayoStudio

IN-HOME WIRELESS DEVICE TRACKS PARKINSON'S DISEASE

The information can be used to generate a report that clinicians can use to tailor treatment

Spotted: According to the World Health Organization, Parkinson's disease is the fastest-growing neurological disease in the world, affecting more than 10 million people worldwide. While there have been major advances in the treatment of the disease, there remain huge challenges in diagnosing and treating the condition. Many individuals with Parkinson's disease are never treated by a specialist, often because they live too far from an urban center. And when patients are evaluated based on testing their motor skills and cognitive functions during clinic visits, the results can be skewed by the day-to-day fluctuation of the disease – making clinical diagnosis very difficult.

In response to these difficulties, researchers from the Massachusetts Institute of Technology (MIT) have developed a wifi-sized in-home device that can monitor a patient's movement and speed, without the need to wear a gadget. The device uses radio signals that reflect off the patient's body as they move around their home, collecting data throughout the day. This information can be used to generate a report that clinicians can use to diagnose severity, track the progression of the disease, and tailor treatment accordingly.

In a new study published recently in Science Translational Medicine, researchers showed that by using machine-learning algorithms to analyse the troves of data they passively gathered, a clinician could track Parkinson's progression and medication response more effectively than they would with regular, in-clinic evaluations. The study was conducted over the course of one year with 50 participants. The data collected by the wearable devices was analysed by machine-learning algorithms that were able to identify patterns in the data that correlated with disease progression and medication response.
The device is still in development, but the researchers believe that it has the potential to transform the way Parkinson's is diagnosed and monitored. This research also represents an important step forward in the use of passive sensing for long-term health monitoring of chronic diseases.

Springwise has spotted a spike in innovations supporting at-home care, as well as innovations focused specifically on Parkinson's disease. These include an assistive robot that cares for the elderly and prevents falls, and genetically engineered tomatoes that grow medicine for Parkinson's disease.

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Takeaway:
Research published in The Lancet Neurology found that the number of people with Parkinson's disease doubled between 1990 and 2015. The rate of increase was highest in low- and middle-income countries, where the disease is now thought to affect more than 6 million people. Over the past generation, the absolute number of people with Parkinson's has steadily increased because the population is ageing and growing larger. Environmental factors could also potentially be contributing to the rise. Innovations such as the MIT device are therefore timely.