Successful first trial for dizziness monitoring device

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A groundbreaking device to help patients with dizziness problems has moved a step forward following a successful research study.

Researchers from UEA and the Norfolk and Norwich University Hospital (NNUH) have published the results of the biggest collection of

continuous eye movement data after testing the effectiveness of a wearable diagnostic headset.

The Continuous Ambulatory Vestibular Assessment (CAVA) aims to speed up the diagnosis of the most common causes of dizziness.

A study into the accuracy, reliability and safety of the novel new device, published in the journal *Scientific Reports*, found the technology to be 99 percent accurate at detecting eye flicker (nystagmus).

In the trial, the CAVA device was worn by 17 participants, who did not have dizziness problems, for up to 30 days and captured 9,000 hours of eye and head movement data, totalling 405 days of data.

The CAVA device has been designed to be lightweight, durable and can be worn day and night to monitor head and eye movements to help evaluate dizziness attacks outside of a hospital setting.

Prof Stephen Cox and Dr. Jacob Newman, from UEA's School of Computing Sciences, developed algorithms to identify seconds of nystagmus from weeks of data recorded by the device.

Principal Investigator John Phillips, who is a Consultant Ear, Nose and Throat Surgeon at NNUH, said the first phase of trialling the device had involved inducing eye flicker on healthy patients.

"Following years of development, I'm delighted that this project was successful in identifying short periods of visually induced nystagmus with a high degree of accuracy," he said.

"The success of this trial has proven the potential of this to fulfil a clinical need and establishing a new field of medicine, vestibular telemetry. These results have provided a good foundation from which to

conduct a further study intended to evaluate the system's diagnostic accuracy among patients with dizziness problems."

Dr. Jacob Newman, from UEA's School of Computing Sciences, said: "We are very pleased that our algorithms have been able to detect such small incidences of nystagmus within such a large dataset, this bodes well for future work that considers nystagmus in individuals experiencing dizziness."

More information: John S. Phillips et al. An investigation into the diagnostic accuracy, reliability, acceptability and safety of a novel device for Continuous Ambulatory Vestibular Assessment (CAVA), *Scientific Reports* (2019). DOI: 10.1038/s41598-019-46970-7