

'ECG for the mind' could diagnose depression in an hour

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An innovative diagnostic technique invented by a Monash University researcher could dramatically fast-track the detection of mental and neurological illnesses.

Monash biomedical engineer Brian Lithgow has developed electrovestibulography which is something akin to an 'ECG for the mind'. Patterns of [electrical activity](#) in the brain's vestibular (or balance) system are measured against distinct response patterns found in depression, schizophrenia and other Central Nervous System (CNS) disorders.

The vestibular system is closely connected to the primitive regions of the [brain](#) that relate to emotions and behaviour, so Lithgow saw the diagnostic potential of measuring and comparing different patterns of electrovestibular activity.

Working with psychiatry researchers at Monash University's Alfred Psychiatry Research Centre (MAPrc) in Melbourne, Australia, he tested volunteers and found distinct response patterns, or "biomarkers", that distinguished different CNS diseases from each other and from regular electrovestibular activity.

Monash has teamed up with corporate partner Neural Diagnostics to develop and patent electrovestibulography, or EVestG™. It is hoped the simple, quick and inexpensive screening process for CNS diseases will eventually become standard practice in hospitals around the world.

"The patient sits in a specially designed tilt chair that triggers electrical responses in their balance system. A gel-tipped electrode placed in the individual's ear canal silences interfering noise so that these meaningful electrical responses are captured and recorded," the Monash researcher said. "The responses are then compared to the distinct biomarkers indicative of particular CNS disorders, allowing diagnosis to be made in under an hour."

Neural Diagnostics CEO Dr Roger Edwards said the implications of the new technique were huge.

"This could be one of the most significant inventions ever to come out of Monash. CNS disorders cost upwards of \$US2 trillion globally and affect one in four people sometime in their lifetime. At present, diagnosing these conditions is done almost exclusively by qualitative measures, through questions and interviews, and it can take many years for sufferers to be correctly diagnosed," Dr Edwards said.

The technique is already attracting international interest and, if further testing goes to plan, it could be adopted in Australian and overseas hospitals within a few years.

"We are doing the necessary research and development and getting independent expert reports done, but results so far are cause for great optimism," Dr Edwards said.

MAPrc Director Professor Jayashri Kulkarni said, "Engineering and psychiatry are two disciplines that do not usually work together, but here at MAPrc, through our collaboration, we are at the forefront of translating biotechnology into clinical tools for psychiatric practice. While there is more work to be done, electrovestibulography could provide a major breakthrough in the diagnosis of mental illnesses".

Source: Monash University ([news](#) : [web](#))

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