

New developments in EEG brain scans could help spot mental disorders early

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Patients suffering from mental and neurological disorders, including autism, ADHD and dementia, could benefit from new developments in brain scanning technology, according to a new study published in *The Neurodiagnostic Journal*.

Recent advances in electroencephalography (EEG) technology, which may one day be used to measure [brain](#) function throughout a patient's lifespan, could encourage earlier diagnoses of common mental and neurological disorders.

Easy-to-use, lower-cost EEG sensors are now widely available, thanks in part to research led by the computer games and consumer wearables industries. This new generation of portable EEG devices makes functional brain measurement possible during primary care check-ups for the first time.

The data the EEG scans produce, stored in patients' [electronic health records](#), can be analyzed by computer algorithms. Growing evidence suggests that new analytical methods can effectively detect subtle signs of atypical [brain changes](#) before they can be spotted clinically.

All current pharmaceutical therapies for dementias are aimed at reversing end symptoms after brain damage has developed over a long time. If early brain changes can be detected long before symptoms appear, then pharmaceutical interventions could aim to slow the progression of the disease or disorder, preventing or reducing the

severity of the symptoms.

Mental illness is responsible for an estimated 32.4% of years lived with disability, and is as great a health burden as heart disease and cancer, when measured in terms of decreased quality of life. Early detection of brain changes would open the door to new treatments aimed at slowing or preventing disorders from advancing as soon as they start to develop, before significant irreversible changes have occurred in the brain.

Lead author of the study, Professor William Bosl, said: "EEG is the brain measurement tool of the future. Its relatively low cost and ease of use means that brain check-ups are now a real possibility in routine primary care. The challenge at this point is to develop the advanced computer algorithms that are needed to extract the brain information associated with various disorders.

"Our initial research has shown that this is possible for autism spectrum disorder as early as 3 months of age. Neuroscience research suggests that EEG analysis may reveal information about a wide range of neurological and mental [disorders](#), thus opening up a new approach based on early detection and prevention."

Professor Bosl and colleagues are currently working to introduce a master's degree program in neurodiagnostic informatics at the University of San Francisco.

More information: *The Neurodiagnostic Journal*,
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