

UCSD Clinical Trial Looks at EEG-based Technology to Predict Patient Response to Anti-Depression Treatments

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Researchers at the University of California, San Diego (UCSD) School of Medicine are testing whether an EEG-based technology that monitors brain activity can successfully predict an individual's likelihood of responding to a specific anti-depressant medication.

UCSD is among nine leading academic facilities across the country to initiate the BRITE (Biomarkers for Rapid Identification of Treatment Efficacy in Major Depression) clinical trial. The trial, currently in progress at [UCSD Outpatient Psychiatric Services](#) located at 140 Arbor Drive in San Diego, is designed to assess the association between drug treatment outcome and brain function in patients with major depression.

Prior studies suggest that changes in neuronal activity in certain regions of the brain are related to depression. Changes in brain response to drug treatment also produce alterations, or biomarkers, that can be detected by a new EEG-based technology. The technology uses electrodes placed on a patient's forehead and earlobes to measure brain responses that appear within seven days, and sometimes as early as 48 hours, after beginning antidepressant treatment.

UCSD researchers, led by Sidney Zisook, M.D., professor of psychiatry, will test whether these quantitative EEG (QEEG) biomarkers can be reliably associated with response or non-response to treatment with antidepressant medications, using both a single drug therapy and combination drug treatments.

"Selecting the best treatment for patients with resistance to an initial antidepressant poses a considerable challenge for doctors," said Zisook. "The most widely prescribed antidepressants usually require a patient to take a drug for up to six weeks before experiencing a marked improvement in symptoms, which can be discouraging to the patient."

Determining the optimal regimen for a particular patient can take up to several months for patients who are resistant to the first-line antidepressant. A tool for predicting eventual clinical response to antidepressants could help clinicians determine the best course of treatment early in the treatment process, thus speeding recovery.

"Costs for medicines and treatment go up the longer successful treatment takes," Zisook said. "Because antidepressants affect brain function right away, brain imaging seems the best way to measure improvement."

The biomarker study may prove important because it is a non-invasive, inexpensive, and simple method of brain imaging that is practical for a clinical setting. Prior clinical trials involving 14 research centers, 41 clinical sites and more than 4000 subjects showed 75 to 85 percent accuracy within one week of predicting and identifying which anti-depressants worked the best in trial participants.

UCSD is recruiting individuals ages 18-75, with symptoms of depression. A clinic psychiatrist will perform an initial screening and diagnosis. Individual participation will last 13 weeks, and all participants will receive antidepressant medications, compensation for time and travel, close monitoring, and free doctor's visits. For more information, call (619) 725-3583.

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Media Contact: Debra Kain, 619-543-6163, ddkain@ucsd.edu

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