

Multi-site study will examine CBT for traumatic brain injury-induced seizures

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Seizures are a common result of traumatic brain injury, especially in military veterans. A new study funded by the DOD, Congressionally Directed Medical Research Programs, and conducted in Providence RI and Birmingham AL (at the Veterans Affairs Medical Centers in Providence, RI and Birmingham, AL, Rhode Island Hospital, Brown University and the University of Alabama at Birmingham) hopes to shed new light on the mechanism behind seizures associated with post-traumatic epilepsy and psychogenic nonepileptic seizures.

The \$3.6 million award, W81XWH-17-1-0619 will examine whether a form of [cognitive behavior](#) therapy, a short-term, goal-oriented psychotherapy approach to problem-solving, could be effective in reducing the frequency and/or severity of seizures in those with TBI. Cognitive behavior therapy has been widely used for improving mental health. It focuses on developing coping strategies to treat specific problems and decrease symptoms of the disorder.

"Individuals can develop pathological responses, including seizures, from major, life-changing events such as [traumatic brain injury](#)," said Jerzy Szaflarski, M.D., Ph.D., director of the Epilepsy Center in the UAB School of Medicine and Co-Principal Investigator of the study. "The overall goal of the study is to see if cognitive behavior therapy will modify brain changes and response to stressful events and whether these changes will result in improved [seizure control](#)."

"Non-pharmacologic approaches for seizures are gaining acceptance as a

therapy," said W. Curt LaFrance Jr., M.D., Co-Principal Investigator and member of the VA RR&D Center for Neurorestoration and Neurotechnology, associate professor of Psychiatry and Human Behavior and Neurology, Warren Alpert Medical School, Brown University, Director of Neuropsychiatry and Behavioral Neurology at Rhode Island Hospital, and neuropsychiatrist at the Providence VA Medical Center. "Building off of our previous pilot studies, this will be the first large scale examination of the neuroimaging brain signals in response to an intervention for patients with seizures."

The study teams will enroll veteran and civilian patients with a history of TBI, divided into three groups of 88 patients each. One group will consist of patients with TBI without a history of seizures, another group will have TBI with epileptic seizures and the last will have TBI with non-epileptic seizures.

Patients with seizures will receive cognitive behavior informed therapy for twelve weeks, administered by trained medical professionals. All patients will receive functional MRI imaging at baseline and again at approximately 14 weeks. An earlier study conducted by LaFrance and Szaflarski in 36 patients showed that cognitive behavior therapy improved seizure control in patients with non-epileptic seizures (LaFrance et al, 2014, [JAMA Psychiatry](#)).

Epileptic seizures can be treated medically and with surgery, but there is not a standard therapy for non-epileptic seizures, which also occur in veterans. Between 10-20 percent of the general population with [seizure](#) disorders experience non-epileptic seizures.

"The anticipated long term scientific gains will contribute to the goal of validating a neurological biomarker for patients with seizures that may be used for identifying treatment response," LaFrance said. "The effort could ultimately affect individuals and caregivers by providing a

diagnostic tool that may aid in identifying treatment targets and response in reducing seizures and common comorbidities in veterans and civilians."

"This project, combining functional neuroimaging with patient interventions, should provide a deeper understanding of neuroanatomic and neurophysiologic processes in patients with seizures," Szaflarski said. "The information gained will generate further hypotheses on neural processes and biomarkers for both epileptic and non-epileptic seizures."

Provided by Brown University

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