

Press Release

December 26, 2022

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SAFE Glen Cove Coalition: Deep Brain Stimulation for Severe Opioid Addiction- Resetting Brain Circuits to aid Recovery

According to researchers at the National Institutes of Health (NIH), repeated drug use changes the circuits in the brain, which is one reason addiction is so hard to overcome. Over a period of weeks to months, use of opioids and other substances alter brain circuits as the body adapts to the effects of these chemicals. With repeated drug use over time, the body may need more and more drug to feel the same effect. People with drug addiction often continue to use drugs to avoid the harrowing physical and psychological withdrawal symptoms from stopping drugs abruptly – creating a vicious cycle that is hard to break. Deep brain stimulation may be an innovative treatment solution for individuals with severe opioid use disorder.

The NIH Helping to End Addiction Long Term (HEAL) initiative is focused on improving prevention and treatment strategies for opioid misuse and addiction and recognizes that multiple strategies are needed to address all aspects of the addiction lifecycle. That means identifying risk factors, stopping overdoses, developing effective treatments, and promoting stable recovery. For each of these aspects, technology can be a powerful tool. HEAL-funded neurosurgeon Ali Rezai, M.D., of the West Virginia University Rockefeller Neuroscience Institute in Morgantown is taking an innovative approach by evaluating the use of deep brain stimulation for patients with severe, treatment-resistant opioid use disorder. The premise is to help change brain circuits whose activity underlies drug addiction, using focused electrical energy from an implanted device. Called deep brain stimulation, the procedure is similar to a pacemaker for the brain that can restore a healthy electrical activity and rhythm.

Deep brain stimulation delivers a mild electrical current to a specific brain region to alter its activity, tuning it up or down. The technique has been used successfully to treat Parkinson's disease, where it acts like an on-off switch for tremors characteristic of this debilitating movement disorder. Deep brain stimulation is also used to treat epilepsy and obsessive-compulsive disorder, and researchers are testing deep brain stimulation for several other conditions including chronic pain, depression, and Alzheimer's disease.

Participants in this deep brain stimulation study have chronic, severe opioid use disorder. These individuals have experienced multiple overdoses and typically have not responded to all of the

treatments they have tried: inpatient, outpatient, or sober housing approaches. Participating in this research study represents a big leap of hope for recovery.

The human brain is a complex and dynamic labyrinth of interconnecting circuits. It allows us to sense the world around us as well as respond to changing conditions. In turn, the brain adapts. An individual is not destined to be a person with addiction, but with continued drug use they become that person over time. The brain gets “rewired” to create changes in the brain’s reward circuit deep in the brain where dopamine is released in response to rewarding stimuli like drugs.

With repeated drug use, however, dopamine production drops off, and craving intensifies. More and more drug is needed to produce a high. The reward circuit sends signals to another part of the brain, the prefrontal cortex, which helps control behavior and is important for decision making and working toward goals. Overstimulation of the reward center and understimulation of the behavior control center create a difficult combination: the desire and physiological need to use more drugs and less impulse control to resist therefore, making it very difficult for people who try to quit drugs.

Determining if the approach is safe is the current goal. In the coming months, 20 more patients will receive an implant toward bringing their brain back into balance. If deep brain stimulation proves to be effective for stabilizing their brain rhythms as planned, the approach might offer a life-changing opportunity for people who have exhausted other options.

The Helping to End Addiction Long-term Initiative, or NIH HEAL Initiative, is an aggressive, trans-NIH effort to speed scientific solutions to stem the national opioid public health crisis. Launched in April 2018, the initiative is focused on improving prevention and treatment strategies for opioid misuse and addiction and enhancing pain management. For more information, visit: <https://heal.nih.gov>.

The National Institutes of Health (NIH): NIH, the nation’s medical research agency, includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. NIH is the primary federal agency conducting and supporting basic, clinical, and translational medical research, and is investigating the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

SAFE, Inc. is the only alcohol and substance abuse prevention, intervention and education agency in the City of Glen Cove. Its’ Coalition is conducting an opioid prevention awareness campaign entitled, "Keeping Glen Cove SAFE," in order to educate and update the community regarding opioid use and its consequences. To learn more about the SAFE Glen Cove Coalition please follow us on www.facebook.com/safeglencovecoalition or visit SAFE’s website to learn more about the Opioid Epidemic at www.safeglencove.org.