

When to consider cranial electrotherapy stimulation for patients with PTSD

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Individuals with posttraumatic stress disorder (PTSD) often report cognitive and sleep disturbances, such as insomnia and poor concentration. Although many patients report improvement with traditional evidence-based treatments, such as pharmacotherapy and psychotherapy, it might be valuable to consider complementary or alternative therapies. Many patients seek treatments that they can self-administer as needed, at their convenience, particularly during symptom exacerbation. One treatment option is cranial electrotherapy stimulation (CES).

As a medical device, CES has been cleared—rather than approved, as is the case for medications—by the FDA to treat depression, insomnia, and anxiety.¹ In the United States, CES devices require a prescription from a licensed health care practitioner, but they are available without a prescription in other countries. Cost for devices range from \$600 to \$1,200 and \$10 to \$20 for electrodes and contact solution. However, insurance companies that provide coverage for durable medical equipment might cover some or all of this expense.

How CES works

After applying contact solution, depending on the device used, the user attaches electrodes to the earlobes, mastoid processes, or other parts of the head that deliver a pulsed current, usually from AA batteries for 20 to 60 minutes.¹ The current causes cortical deactivation and could affect emotional regulation by influencing neurotransmission in the thalamus, hypothalamus, and limbic system.^{1,2} CES increases cerebrospinal fluid levels of beta-endorphin, adrenocorticotrophic hormone, and serotonin, which play a role in depression and anxiety.³

There are no known contraindications for CES. Adverse effects are rare, temporary, and mild; skin irritation, vertigo, or headache are the most common.¹

Evidence of efficacy

There are no double-blind placebo-controlled trials evaluating the efficacy of CES for PTSD. However, there is a case series and a large survey of patients supporting its use.

- In a case series, 2 patients reported improved occupational functioning and reduced PTSD symptoms after using CES, 100 to 500 mA, 20 to 60 minutes a day, 3 to 5 days per week.⁴
- In an online survey of 145 veterans and active-duty military personnel, 60% of individuals used CES for PTSD, and 20% of those individuals were not receiving pharmacotherapy.⁵ Participants reported at least a 25% reduction in symptoms using CES for at least 20 minutes, once or twice daily, with a current of 100 to 600 mA.⁵

- In an expert opinion, patients noted improved sleep quality and reduced alcohol and drug withdrawal symptoms after 20-minute treatments, twice a day, with a current of 2 mA. Currents could be increased to 4 mA, if there was no improvement after 2 weeks.⁶

Some patients experiencing exacerbation of PTSD symptoms could benefit from using the device for 1 hour several times a day until symptoms subside.⁵

Optimal strength, frequency, and duration of treatment vary among patients, and further studies are needed to assess these parameters as well as efficacy because definitive studies are currently lacking. CES has not always shown efficacy, such as in some patients with depression.⁷ Despite the limited evidence base, it is reasonable to consider CES for patients with PTSD. This modality might be helpful for patients who have comorbid pain, anxiety, and insomnia, or for those who seek a complementary, convenient, safe, self-administered treatment.

References

1. [Kirsch DL](#), [Nichols F](#). Cranial electrotherapy stimulation for treatment of anxiety, depression, and insomnia. [Psychiatr Clin North Am](#). 2013;36(1):169-176.
2. [Feusner JD](#), [Madsen S](#), [Moody TD](#), et al. Effects of cranial electrotherapy stimulation on resting state brain activity. [Brain Behav](#). 2012;2(3):211-220.
3. Shealy CN, Cady RK, Culver-Veehoff D, et al. Cerebrospinal fluid and plasma neurochemicals: response to cranial electrical stimulation. [J Neuro Orthop Med Surg](#). 1998;18(2):94-97.
4. [Bracciano AG](#), [Chang WP](#), [Kokesh S](#), et al. Cranial electrotherapy stimulation in the treatment of posttraumatic stress disorder: a pilot study of two military veterans. [J Neurother](#). 2012;16(1):60-69.
5. [Kirsch DL](#), [Price LR](#), [Nichols F](#), et al. Military service member and veteran self reports of efficacy of cranial electrotherapy stimulation for anxiety, posttraumatic stress disorder, insomnia, and depression. [US Army Med Dep J](#). 2014:46-54.
6. Xenakis SN. The rise of cranial electrotherapy. [Psychiatric Times](#). <http://www.psychiatrictimes.com/electroconvulsive-therapy/rise-cranial-e...> Published July 24, 2014. Accessed December 20, 2016.
7. [Mischoulon D](#), [De Jong MF](#), [Vitolo OV](#), et al. Efficacy and safety of a form of cranial electrical stimulation (CES) as an add-on intervention for treatment-resistant major depressive disorder: a three week double blind pilot study. [J Psychiatr Res](#). 2015;70:98-105.