



BEHAVIORAL HEALTH ECT SERVICES

What is ECT?

Electroconvulsive Therapy (ECT) is a safe and effective medical treatment used for a variety of neuropsychiatric illnesses, including Major Depressive Disorder, Bipolar Disorder, Schizophrenia, and Catatonia. ECT has been used in the United States for over 80 years and more than 1 million people receive ECT around the world annually.

ECT is a brief outpatient procedure performed by a psychiatrist in a hospital setting and may occur when patients are receiving inpatient or outpatient psychiatric treatment. During ECT patients will receive general anesthesia and a painless modified electrical current is administered to the patient's scalp resulting in a brief generalized seizure in the brain. This seizure is carefully monitored using Electroencephalography (EEG) to ensure safety and response to stimulation. After the seizure is finished, patients regain consciousness and continue to recover from the effects of general anesthesia. Patients can often expect to return home within an hour after their treatment.

Although ECT is not a curative treatment, as relapse may occur after a course of ECT, it can significantly and expeditiously improve severe psychiatric symptoms. Patients often receive an initial course of 6-12 treatments, with treatments being administered multiple times per week. Such an initial treatment course is often followed by a taper of decreasing treatment frequency or, in certain circumstances, ongoing maintenance treatments. More details regarding ECT treatments are discussed below.

When is ECT used?

ECT is used when initial treatments, like medications, are ineffective at improving symptoms or when patients are deteriorating so rapidly that their condition is considered life-threatening. The American Psychiatric Association, the American Medical Association, and the U.S. Surgeon General all endorse ECT as a valuable tool for the treatment of depression and the Food and Drug Administration (FDA) has issued statements on the safety and effectiveness of ECT in treating individuals over the age of 18 with severe episodes of depression associated with Major Depressive Disorder and Bipolar Disorder. Additionally, large international reviews have shown ECT to be safe and effective for catatonia, treatment-resistant mania, and treatment-resistant schizophrenia. Safety and effectiveness of ECT has also been demonstrated in individuals under 18 years old with treatment resistant and life-threatening neuropsychiatric conditions. ECT has also been successfully used in pregnant and post-partum patients experiencing severe psychiatric symptoms (psychosis) and remains a valuable treatment option especially when pharmacotherapy options would pose a significant risk to the child.

How is ECT treatment performed and how many treatments should be expected?

Prior to receiving ECT, patients are evaluated by a primary care doctor who performs a medical history and physical examination to determine a relative risk for undergoing ECT treatments. There are no specific medical conditions that absolutely disqualify someone from receiving ECT; however, there are medical conditions that increase an individual's relative risk of complications during the procedure. Patients with neurological problems like strokes, brain bleeds, or aneurysms (outpocketing of blood vessels), as well as patients with heart problems, such as a recent heart attack or heart failure, can have an increased risk of complications during ECT. Similarly, patients with severe lung problems or patients who have bone fractures can also be at an increased risk for complications during treatment. Having implantable medical devices like pacemakers or nerve stimulators does not automatically disqualify someone from receiving ECT.

During delivery of ECT patients are under general anesthesia and do not “feel” the treatment being delivered. Patients are first given medication through an intravenous (IV) line that results in unconsciousness. They are then given a medication that reduces muscular contractility to minimize the intensity of convulsions during the seizure. Patients may also be given medications to regulate heart rate and blood pressure during the treatment, as necessary.

Modern ECT treatment involves a delivery of a small amount of modified electric current that is briefly passed through the scalp into the brain resulting in a seizure. Modern constant current ECT devices use square wave pulse trains that can be modified in frequency, pulse width, and duration. This stimulation is typically introduced on the right side of the brain to minimize potential side effects associated with stimulation over language centers typically located on the left side. Bilateral treatment may be indicated in patients who do not respond to unilateral treatments or in patients with life-threatening neuropsychiatric illness, such as malignant catatonia or neuroleptic malignant syndrome. A conducting gel is used to facilitate the flow of electricity and prevent injury or irritation to the skin. A soft mouthguard is also used to prevent any dental injuries that could result from a contraction of jaw muscles that may be activated during the stimulation.

The waveform of the seizure, as well as other physiological parameters, including blood pressure, blood oxygenation, and pulse rate, are carefully monitored throughout the treatment. While seizures induced by ECT typically resolve on their own, medications can also be given to assist in ending a seizure in the event the seizure continues beyond a desired duration.

Patients wake up in the treatment room within seconds to minutes after the seizure stops and are evaluated by staff who ensure the patient is not experiencing any confusion or discomfort. Mild nausea and headache sometimes occur after treatment. Patients are typically ready to be driven home 30 minutes to an hour after the treatment is complete.

ECT is typically administered in an initial course of between 6-12 treatment sessions, with such sessions occurring two to three times per week until improvement is observed. Once a patient has improved, many psychiatrists will recommend gradually spacing ECT treatments before completely stopping treatment. Tapering treatments, in addition to continuing psychiatric medications, have been shown to reduce the risk of relapse following discontinuation of ECT.

Does it work? How does it work?

ECT is one of the most effective treatments for unipolar and bipolar depression with roughly 75% of patients responding (“getting over half better”) and 50% experiencing a total remission of depressive symptoms. Over 80% of patients with catatonia respond to treatment. For patients with schizophrenia (especially when medications have had a small effect), response is likely in 30-50% of patients, but total remission of symptoms is still unlikely.

In a recent study of severely depressed patients, ECT was found to outperform intravenous ketamine and after 6 treatments 63% of patients in the ECT group experienced a total remission of their depressive symptoms however only 43% the patients in the intravenous ketamine treatment group met remission criteria following 6 infusions. A larger percentage of patients in the ketamine treatment group were unable to complete the study compared to the ECT treatment group.

The exact mechanism underlying the therapeutic effects of ECT is not understood. Therapeutic link between seizures and mental illness have been observed in patients who experienced resolution of psychosis or depression after experiencing seizures. Early attempts at inducing seizures with medications like camphor oil or metrazol were successful but had many side effects. ECT was developed as an alternative way to induce seizures that had less side effects and was safer than previous pharmacological methods. ECT treatments have been shown to increase cerebral blood flow, increase neurotransmitter and neuropeptide levels, increase neurogenesis (new neuron growth) and gliosis (growth of glial cells that support neuron health), and increase chemicals in the brain that are implicated in neuron health like brain-derived neurotrophic growth factor (BDNF) and vascular endothelial growth factor (VEGF).

What do patients think of treatment?

Most patients tolerate treatments well and many patients have a significant reduction in symptoms and an improved quality of life. In a recent study performed by the Mayo Clinic, 91% of the participants that received ETC indicated that "I'm glad I received treatment," while over 50% would choose to receive ECT again.

What are the side effects and risks associated with ECT? What about memory?

All medical treatments have potential risks and patients should have a comprehensive conversation with their Psychiatrist to discuss if ECT is appropriate for their condition. Overall, ECT is a very safe procedure and carries similar risks associated with any procedure involving general anesthesia. The risk of death associated with anesthesia is 1 in 80,000, which is considered to be very low and there is no special added risk of death associated with ECT and anesthesia. Prior to the treatment patients may have pain, bruising, or skin irritation associated with IV placement. It is imperative that patients do not eat or drink anything 8 hours prior to treatment to minimize the risk for aspirating stomach contents during the procedure. Upon awakening from the treatment, patients may experience temporary confusion or disorientation, which typically resolves in several minutes. Patients may also feel mild muscle soreness, jaw or neck pain, headache or fatigue following the treatment. For pregnant patients, the side effects are the same as above. In addition, fetal heart rate can slow and uterine contractions may occur, however these most often resolve without the need of any intervention.

Difficulties with memory, mainly anterograde amnesia (forgetting events that happen between treatments), have been reported with ECT. Although some case reports have described patients who have experienced difficulty with long-term memories following ECT, large systematic reviews have found that ECT does not have a major impact on long-term memory and tends to actually improve cognitive and executive functioning in patients who receive treatment. Difficulties with memory have been shown to improve as the frequency of ECT treatments are reduced. Memory issues are less commonly observed in patients who receive unilateral treatments and ultra-brief pulse width stimulation (pulse width refers to the duration of each square-wave pulse with ultra-brief pulses being shorter than 0.5 milliseconds).

Acknowledging the History and Stigma of ECT

Despite the compelling evidence for its safety and effectiveness, ECT has been a target of negative social publicity and controversy due to its historical association with frontal lobotomies and depictions of early unmodified ECT without the use of anesthesia. Many cite an image of Jack Nicholson in *One flew over the Cuckoo's Nest* as their main familiarity with ECT and view the treatment as a form of punishment, coercion, or torture. These associations and depictions bear no resemblance to modern ECT which is conducted with informed consent from the patient or their guardian and is administered in a manner to preserve the utmost safety, care, and respect for the patient.

We appreciate your interest in ECT. Please feel free to contact us at [\(512\) 324-3380](tel:5123243380) or email us at ECT@Ascension.org with any questions or concerns.

Thank you,



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