



## Electroconvulsive Therapy

# What you need to know about ECT

Brochure for users  
and their families

**This brochure was developed by the Centre of Excellence in electroconvulsive therapy Quebec (CEEETQ), including its director Dr. Simon Patry and its coordinator, Dr. Morgane Lemasson.**

**This document was written in collaboration with the Quebec City, Montreal and Douglas Mental Health University Institutes and Charles LeMoine Hospital, including partner users, the Health Intervention and Technology Assessment Unit and the Clinical Practice Development and ECT departments. The content of the document is based on many sources, including the American Psychiatric Association guide. The illustrations were provided by André Lacroix, an electro-physiologist at the Quebec City Mental Health University Institute.**

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- Staff at health centers in Quebec
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Masculine pronouns are used generically in this document.

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## Introduction

It is important for users to understand the nature, purpose and course of electroconvulsive therapy (ECT) and its benefits, side effects and possible risks. They must be informed about the consequences of refusing ECT and about alternative treatment options.

## What is ECT treatment?

ECT, also called sismotherapy, electroconvulsive therapy, or electroshock therapy, is a medical treatment known to be effective for many mental disorders and certain serious medical conditions. After general anesthesia, electrical current is delivered into the skull through electrodes for a few seconds. This current induces a short brain seizure but does not cause any pain.

## How does ECT work?

Studies suggest that ECT leads to the same changes in the brain as antidepressants, but more quickly. The way ECT works is not yet completely understood and is still the subject of scientific research.

## Who can receive ECT?

First, the physician first does a comprehensive assessment of the advantages and disadvantages of this therapy for the user in comparison to other available treatments. Today, ECT is mostly given to people suffering from severe major depression, certain bipolar disorders, catatonia or schizophrenia, where such conditions are resistant (refractory) to conventional treatments (e.g., medication and psychotherapy). ECT is used in the following cases:

- Conventional therapies have failed
- Conventional therapies are not tolerated or are contraindicated
- The user's life is threatened in the short term and this treatment is necessary to rapidly improve his condition
- ECT is effective in treating the user's condition
- The user has responded well to ECT in the past and he prefers this treatment

## Why shouldn't I replace ECT with medication or psychotherapy?

Medication and psychotherapy are not always enough to improve the health of some users. Scientific literature has shown that nearly 30% to 40% of users are drug resistant. According to the American Psychiatric Association, 50% to 60% of individuals with severe major depression see significant improvement when ECT is used after the failure of one or more antidepressant therapies. ECT seems to be an effective treatment for people resistant to drugs and/or psychotherapy.

ECT quickly relieves symptoms and is particularly suitable for a person with an illness that can be life threatening.

## How is ECT administered?

ECT is often administered in the morning, up to three times a week.

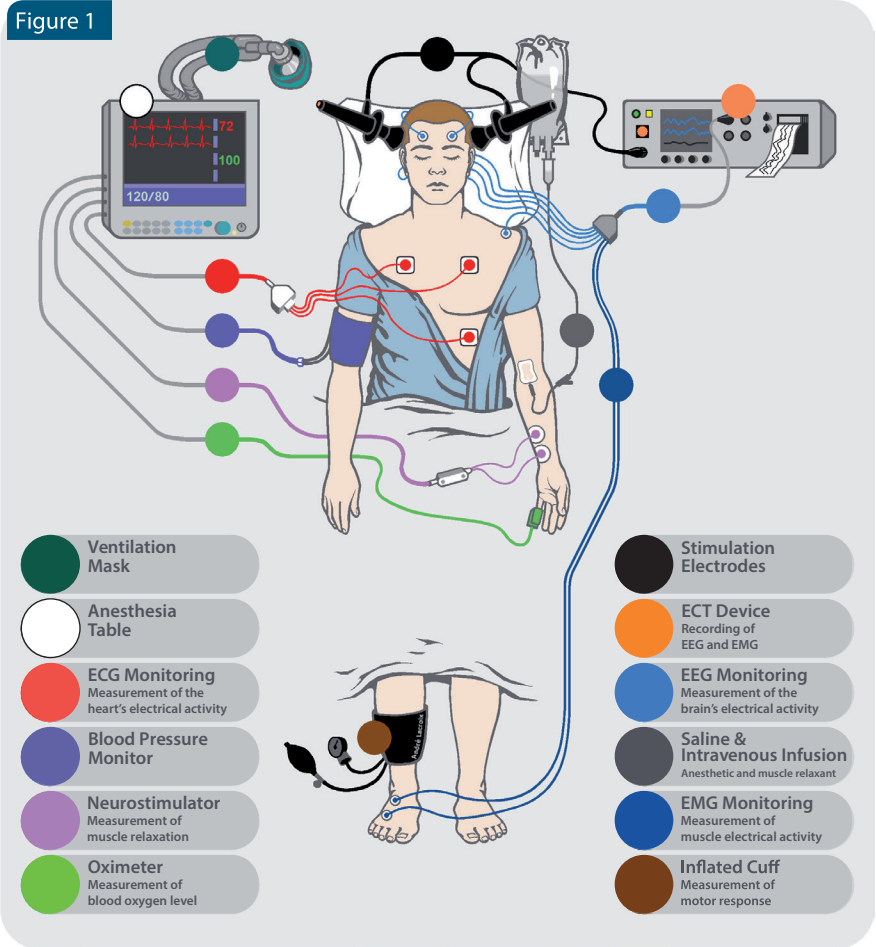
**Before the first treatment and, if necessary, afterward,** the general condition of the user is assessed during a consultation (e.g.: with a psychiatrist and anesthesiologist), through a physical exam and laboratory tests. Any particular medical condition is monitored very closely.

**The day before the ECT,** the usual medication may be modified by the physician.

### **The day of the ECT,**

- Due to general anesthesia, the user needs to fast (no eating or drinking) at least eight hours before the ECT. However, if the physician allows it, some medications can be taken with water. Additional instructions may be given, if necessary, (e.g.: no smoking, no alcohol drinks, special hygiene rules, no dentures).
- In the treatment room, intravenous (IV) fluid is introduced into a vein in the user's arm or hand to administer medications (e.g.: anesthetic and muscle relaxant). A number of monitoring devices are used. Head sensors record electrical activity in the brain (electroencephalogram, otherwise known as an EEG), sensors on the chest measure the electrical activity of the heart (electrocardiogram or ECG) and a blood pressure device is placed around the upper arm to measure blood pressure (**Figure 1**). Other sensors are also used to record the blood oxygen level and the electrical activity of muscles (electromyogram, otherwise known as an EMG). In certain health care facilities, a cuff is inflated around the ankle and/or arm prior to the administration of the muscle relaxant, preventing it from reaching the end of the insulated limb. This procedure makes it possible to check movements and measure the duration of the seizure, also recorded by the EEG.

- The user falls asleep for five to 10 minutes, with an anesthetic drug injected through an IV. Then, a muscle relaxant is given to relax the muscles and reduce movements. As a result, the user will not feel the treatment.



**Figure 1:** Illustration of an ECT session.

- ECT starts when the user is completely asleep and his muscles are relaxed. At this point, a brief current is delivered for a few seconds by the electrodes, inducing the seizure.
- Throughout the procedure, the user receives oxygen through a ventilation mask placed over his mouth and nose.
- At the end of treatment, the user wakes up under the supervision of the medical team monitoring his breathing, pulse and blood pressure.
- The total length of an ECT session, including the preparation, procedure and medical supervision, can be up to two hours, depending on the health care facility.

**After every session:** due to the anesthesia, the user should not drive and must be accompanied by someone upon his departure. For more information, he can talk to his physician or the medical team.

<b>Questions to ask your physician:</b>

## Where are the stimulation electrodes placed on the head?

Electrical stimulation produces carefully controlled electrical current. Scientific research has shown that the effectiveness of ECT and the extent of the side effects depend on both the position of the stimulation electrodes and the intensity of the electric current.

There are a number of stimulation techniques (**Figure 2**):

- **Unilateral ECT:** Electric stimulation is supplied by one electrode on the temple and another on the top of the head.
- **Bifrontal ECT:** Electric stimulation is supplied by two electrodes on the forehead.
- **Bitemporal ECT:** Electric stimulation is supplied by two electrodes on the right and left temples.

The location of the electrodes is selected by the physician, depending on the severity of the symptoms and potential side effects. Given the current state of knowledge, bitemporal stimulation seems to provide the most rapid results, but it causes more side effects (described below). As a result, bifrontal and unilateral ECT is initially favored over bitemporal stimulation. If these two stimulation techniques are ineffective, bitemporal ECT should be considered.

## Who administers ECT?

A team of ECT specialists is mandatory. The team usually consists of a psychiatrist, anesthesiologist, nurse and, depending on the health care facility, an electrophysiologist and a respiratory therapist. The psychiatrist and anesthesiologist, who are mainly responsible for the administration of ECT, are experienced specialists who regularly keep their knowledge up-to-date.

### Questions to ask your physician:

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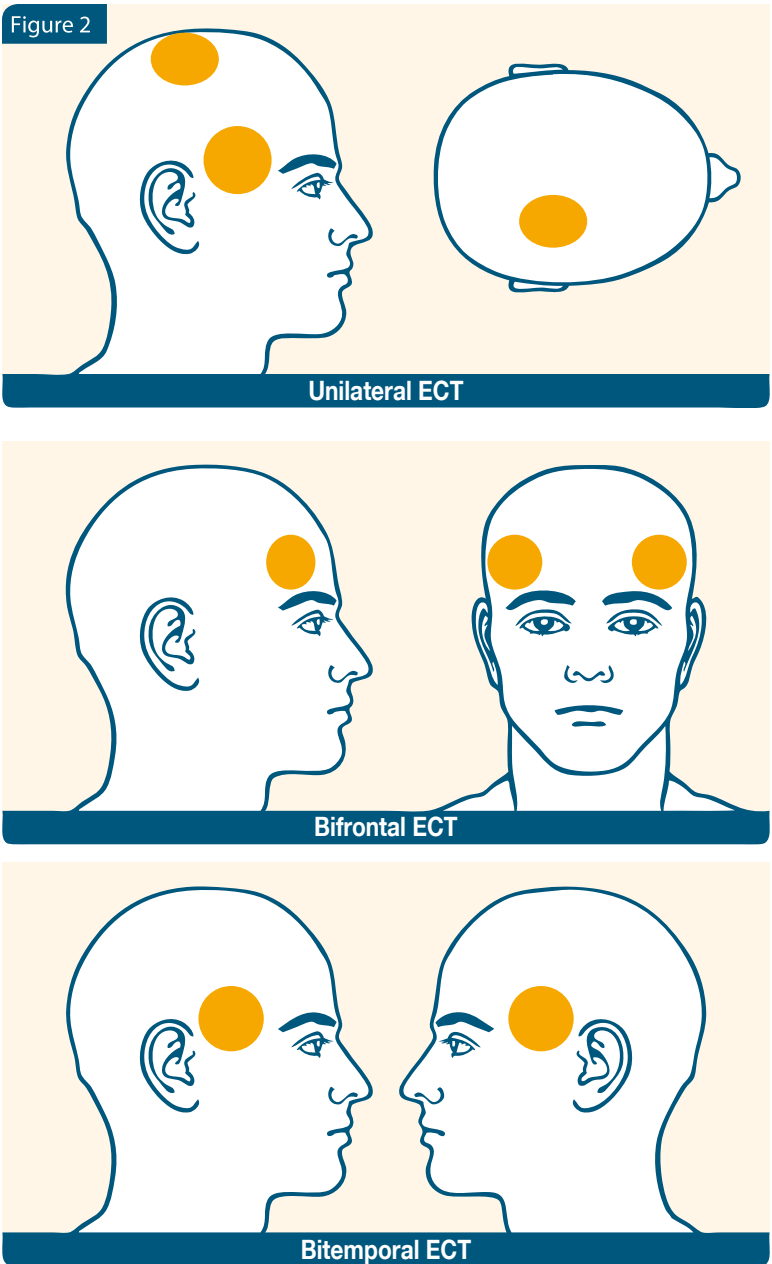
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Figure 2



**Figure 2:** Illustration of the stimulation electrode positions (yellow circles) during unilateral, bifrontal or bitemporal ECT.



## How many sessions are necessary?

A therapeutic response is usually seen after a series of six to 12 ECT sessions on average, at a frequency of two to three sessions per week.

However, the number of sessions necessary to see optimal clinical improvement may vary from one user to another due to the severity of the illness. That is why the user's medical condition is periodically assessed by his physician throughout the ECT treatment.

## Does ECT cure the user?

ECT is effective in treating symptoms associated with some psychiatric disorders, particularly major depression. The efficiency level varies according to the individual, the type of the illness and its severity. As with many medical treatments, most users respond quickly to ECT. Some see their condition improve (but relapse after a while) and need additional sessions. Some people have no improvement.

Additional sessions (ECT maintenance sessions associated or not with medication and/or psychotherapy) are sometimes necessary to keep improving the medical condition. Maintenance sessions are gradually spaced farther apart, from one session per week to once every few weeks.

## What are the contraindications?

According to the American Psychiatric Association, there is no absolute contraindication to ECT – no situation prohibits the use of this treatment. However, certain conditions may present more risks if, for example, the user has:

- Specific neurological conditions  
(e.g.: intracranial hypertension)
- Certain heart conditions  
(e.g.: recent myocardial infarction)
- Allergies  
(e.g., drugs for anesthesia)

Due to these conditions, the decision to use this therapy is made after a complete physical exam. ECT is given in a treatment room equipped to solve any problems that may arise.

## Is ECT dangerous for the user?

With any medical procedure, there can be, along with the advantages there can be some disadvantages.

Accidents and medical complications (dental complications and an irregular heartbeat) associated with ECT are very rare. The same is true of complications associated with general anesthesia. Studies have shown that the risk of death associated with ECT is very low and would be comparable to minor surgical procedures under general anesthesia.

## Does ECT cause brain damage?

There is currently no scientific evidence that the administration of ECT causes brain damage. On the contrary, scientific evidence suggests that the damage may not be related to treatment, but rather to the illness. Human clinical trials have shown no change in brain structure and composition after ECT. Animal studies have not shown any evidence of brain damage associated with short seizures (a few seconds) similar to ECT-induced seizures. Only a seizure lasting many hours may damage the brain.

## What are the most common side effects with ECT?

It is common and normal for the user to be confused and disoriented upon awakening; this is due both to the anesthesia and the ECT. This confusion usually disappears quickly.

Some people suffer from headaches, body aches or muscle stiffness after the procedure. These problems disappear the same day, mostly with medication (e.g., acetaminophen). Nausea is rare and only lasts a few hours.

Memory problems are the side effects that generate the most concern: there are two types. The first is memory loss, referred to as anterograde amnesia, the inability to recall recent events or information (such as a recent conversation or a book read a few days or hours before or after the ECT session). The second type of memory loss, referred to as retrograde amnesia, relates to certain past events. Scientific data seems to show that these problems last between a few days and a few months. In rare cases, some memories may be permanently lost.

Memory problems are linked to the number of sessions, the stimulation electrode positions and certain mental disorders themselves.

## What are the alternatives to ECT?

When medications and psychotherapy are ineffective, there are some alternatives to ECT, but their effectiveness is still under study. User can consult their physicians for more information on options.

## Is ECT consent mandatory?

Yes. Before receiving treatment, users (or their representative) must provide written consent to authorize ECT and general anesthesia by signing a consent form. The consent must be **free** (without coercion or pressure) and **informed** (in the light of all the information). It is a good idea for the user to be accompanied by a relative or anyone who can help him make a decision.

For his ECT consent to be valid, users must be found competent to consent. Otherwise, consent is obtained from a person authorized by law (see Section 11 of the Quebec Civil Code).

At any time, the user (or his representative) may withdraw consent verbally and his treatment will cease immediately.

## Conclusion

ECT is an effective treatment for some refractory psychiatric disorders and certain serious medical conditions.

### Questions to ask your physician:

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## Learn more

Users should not hesitate to discuss ECT with their physician or the medical team at any time.

For more information, three books are recommended. The authors of the first two books (in English) are two psychologists opposed to ECT. Suffering from depression themselves, they were eventually treated with ECT. By describing their illness and treatment, the authors share their ECT experience with readers.

- **Holiday of Darkness**, by Norman S. Elder, Wiley-Interscience, New-York, 1982
- **Undercurrents: a therapist's reckoning with depression**, by Martha Manning, Harper, San Francisco, 1995
- **L'électroconvulsivothérapie. De l'histoire à la pratique clinique: Principes et applications**, by David Szekely and Emmanuel Poulet, Psychopathology Collection, 2012

Other reports on ECT are available in French and English:

- **L'utilisation des électrochocs au Québec**, by Agence d'évaluation des technologies et des modes d'interventions en santé, 2002
- **The practice of electroconvulsive therapy**, by the American Psychiatric Association, 2001

Videos are now available on the CEECTQ  
(Centre of Excellence in electroconvulsive Quebec) site ([www.ceectq.ca](http://www.ceectq.ca))  
and the ECANEC (Canadian Electroconvulsive Therapy Survey)  
site ([www.canects.org/patients.php](http://www.canects.org/patients.php)).

### Contacts during treatment:


For more information, visit [www.ceectq.ca](http://www.ceectq.ca)