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Transcranial Magnetic Stimulation (TMS)[1-9]

Transcranial Magnetic Stimulation (TMS) is a safe, effective, and non-invasive* procedure that is used to improve symptoms of depression and other conditions that have not responded to previous treatments.

**Non-invasive means no injections, cuts, or needle entry through the skin are necessary for the procedure*

How does TMS work?

- TMS uses repetitive magnetic pulses to stimulate areas of the brain that are responsible for regulating mood.
  - During TMS, a magnetic coil is placed on the head to allow magnetic waves of different frequencies, intensities, and patterns to target hard-to-reach tissue and nerves deep within the brain.
- Since people receiving TMS remain fully awake during the procedure, they may hear or feel tapping, feel mild scalp discomfort, or experience minor facial twitching.
  - Earplugs are provided and required for treatment due to the brief but loud clicks and high sound pressures from the magnetic coil.
- After treatment sessions, patients may experience mild headaches or dizziness, but are able to return to their normal daily activities immediately after, including driving.
- Generally, TMS treatment sessions last 30–60 minutes, and are done in outpatient settings 5 times per week for approximately 4-6 weeks.

What conditions does TMS treat?

- TMS is currently approved by the U.S. Food and Drug Administration (FDA) to manage the following conditions, especially if previous treatments or medications have not resolved symptoms: depression, obsessive-compulsive disorder (OCD), and smoking cessation.
- The FDA has approved an at-home single-pulse handheld device version of TMS for migraines.
- Soon, the FDA may approve TMS to treat chronic pain, schizophrenia, generalized anxiety disorder (GAD), post-traumatic stress disorder (PTSD), bipolar depression, Parkinson disease, and/or Tourette's disorders.

Who should not use TMS?

Although TMS is a very safe procedure, people who have electronic or magnetic implants (including cochlear implants and pacemakers) and people who have substance use disorders (SUD), seizures, serious head trauma, or brain tumors should not use TMS. This is because TMS may cause damage or pain to people with electronic or magnetic implants, and research is still studying the risks vs. benefits of using TMS in people with seizures and conditions that increase the likelihood of having seizures such as SUD, head trauma, and brain tumors.

Electroconvulsive Therapy (ECT)[10-16]

Electroconvulsive therapy (ECT) is a safe, highly effective, and non-invasive procedure* that is used to improve symptoms of severe depression and catatonia that have not responded to previous treatments.[10,16]

**The ECT procedure is non-invasive, but the medications used prior to the procedure are given intravenously (injected into veins).*

How does ECT work?

- During ECT, electrodes are placed on the scalp and electric stimulation is used to produce brief and controlled seizures that restore brain functioning by resetting impaired brain chemicals and improving emotional processing.
    - This helps to quickly address the symptoms of hard-to-treat mental health conditions.
- In order to make sure that there is no pain or bodily damage caused during ECT, general anesthesia and muscle relaxants are given to put people to sleep and relax the body before each treatment session. This is the only invasive part of the procedure since these medications are given intravenously, which means they are injected into veins.
    - During ECT, a medical team also ensures patient safety by monitoring essential body functions such as blood pressure, heart rate, brain waves, and breathing.
- Although the actual treatment generally only lasts around 30-60 seconds, and people wake up after 5-10 minutes, the whole process takes about an hour total.
    - This includes the time that doctor spends with people before the treatment to make sure the procedure is safe and appropriate, and the time spent in a recovery room after the procedure.
- After ECT sessions, people may feel confused, fatigued, or nauseous from being put to sleep. Other side effects of the procedure may include headaches, muscle soreness, briefly increased blood pressure, and temporary memory loss, trouble thinking clearly, or difficulty learning.
    - The benefits of ECT are thought to outweigh the risks of these potential short term side effects for most people.
- Treatment with ECT typically requires 2-3 sessions per week for about 6 to 12 treatments depending on how people respond to the therapy.
    - While ECT is very effective and has rapid results, it does not prevent future episodes, therefore most people will need some type of maintenance treatment such as medication, talk therapy, or continual ECT treatments.

What conditions does ECT treat?

- ECT is FDA approved for the treatment of severe depression and catatonia in people aged 13 years or older if other treatments did not relieve symptoms.
    - ECT is especially beneficial in cases where rapid improvement is needed (such as risk of suicide).
- Research also shows promising evidence in other conditions such as schizophrenia and bipolar disorder, but more studies are being done to confirm these benefits.

Who should not receive ECT?

- People who have underlying heart or lung disorders (such as recent heart attack, stroke, pneumonia, or asthma) should not receive ECT due to the increased risk of heart complications or breathing problems associated with anesthesia.
- Due to the potential side effects, people with attention or memory loss issues and vulnerable populations such as older or pregnant people should be cautious and discuss the benefits vs. risks with their physicians.

Emotional Freedom Technique (EFT)[17-22]

Emotional Freedom Technique (EFT), also known as "tapping," is a self-soothing technique that can help manage negative or overwhelming emotions, thoughts, or feelings such as stress, anxiety, or pain. EFT is an effective holistic practice that combines elements of cognitive behavioral therapy (CBT), exposure therapy, energy psychology, and acupressure to relieve physical or mental distress.

How does EFT work?

- Pick a quiet and comfortable place to sit (usually away from others unless EFT is being used in a group setting).
- Rate how much a thought, emotion, or situation is currently bothering you on a scale of 0 to 10, then describe it as a statement followed by a positive thought or point of view.
    - For example: "even though others do not understand me, I accept myself and I how I feel."
- Repeat the statement three times while tapping each of the following locations in order (one at a time):
    1. Edge of the hand below the pinky finger
    2. Top of the head
    3. Inside edge of an eyebrow
    4. Outside edge of an eye
    5. The bone underneath an eye
    6. Between the upper lip and nose
    7. Beneath a collarbone
    8. Under an armpit
- Once you are finished, remeasure how you feel on a scale of 0-10.
- Repeat steps 1-8 until the rating has decreased or until you feel better about the issue.

Who can use EFT and how effective is it?

- EFT can be used by anyone at any time without the supervision of a health care provider.
- Many studies have shown that regular use of EFT is very effective in reducing symptoms associated with stress, burnout, anxiety, PTSD, depression, cravings, and mild pain.
    - However, it should not be used to replace treatment for any serious physical or mental health condition.
- Studies also show that people who use EFT have increased quality of life, happiness, and mental wellbeing.

Esketamine (Spravato)[23-27]

Esketamine is a nasal spray antidepressant that is FDA approved for people aged ≥18 years old that continue to experience symptoms of severe depression despite previous treatment with at least two antidepressants.

How and when does esketamine work?

- Esketamine works by regulating brain chemicals called glutamate that are involved in depression.
- Although some symptom improvement may be seen in 2-4 hours, the full antidepressant effects of the medication may take a couple of weeks.

How is esketamine administered?

- Esketamine nasal spray is self-administered, but due to the risk of sedation and dissociation, it can only be taken under the supervision of a health care provider.
    - The health care provider will provide instructions on how to correctly administer the nasal spray.
        - A complete dose from an esketamine nasal device contains one spray per nostril.
        - If more than one dose is needed, a 5-minute rest between each dose is required.
    - After administration of esketamine, the health care provider is required to monitor for side effects for ≥2 hours and will determine when the patient can safely leave the clinic.
    - People may not drive themselves home or operate heavy machinery on the same day of treatment.
- The initial dosing of esketamine is twice weekly for four weeks, then is decreased to either weekly or twice a month for maintenance dosing.
    - People taking esketamine must also be on an oral antidepressant.

What are the side effects of esketamine?

- Common side effects of esketamine include altered taste, drowsiness, dizziness, dissociation, increased blood pressure, impaired coordination, suicidal ideation, headache, and nausea
    - These side effects generally resolve 1.5 hours after each dose.
    - To help reduce risk of nausea, people should avoid food for ≥2 hours and avoid drinking any liquids for ≥30 minutes before taking esketamine.

Who should not take esketamine?

- People who have had a heart attack within the last six weeks and anyone who has had a previous stroke, aneurysm, or any vascular disease such as peripheral vascular disease (PAD) should not take esketamine since the side effect of increased blood pressure can cause severe risk in these patients.
- Due to the side effects of dissociation and suicidal ideation, people with psychosis or suicidal ideations should also avoid esketamine. Additionally, people who have a substance use disorder (SUD) should avoid esketamine due to risk of misuse.
- People with liver failure should be cautious when considering esketamine because liver impairment can raise the concentration of the medication and worsen the side effects. These patients may need to be monitored for a longer amount of time after use.

Go online to find more information and to view the references for this toolkit.

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