AAN Summary of Evidence-based Guideline for PATIENTS and THEIR FAMILIES

TREATMENT OF ESSENTIAL TREMOR

This fact sheet is provided to help you understand which therapies help treat essential tremor.

Neurologists from the American Academy of Neurology are doctors who identify and treat diseases of the brain and nervous system. The following evidence-based information* is provided by experts who carefully reviewed all available scientific studies on treatments for essential tremor. The information summarizes the main findings of the 2005 AAN guideline on treating essential tremor and the 2011 update of that guideline.

Certain drugs can help improve tremor (shaking) in people with essential tremor. However, not all people with essential tremor improve on or tolerate these drugs. For these people, other treatments may be explored.

What is essential tremor?

Essential tremor is a movement disorder that usually involves shaking of the hands. The head, voice, face, and other body parts also can be affected. Essential tremor affects about 10 million people in the United States. It is more common than Parkinson disease. It can be confused with other types of tremor such as Parkinson disease. Although it is not painful, essential tremor is sometimes disabling. It often interferes with daily tasks such as eating, drinking, writing, or shaving.

Essential tremor can begin at any age. However, a person's risk of developing it increases with age. In people with essential tremor, the condition usually worsens over many years. The cause of essential tremor is not yet known. Tremors happen when nerves do not communicate well with the muscles they support. Essential tremor can occur in people with other brain or nervous system problems. These include dystonia and parkinsonism.

My doctor said I have essential tremor. Are drugs available to treat it? How do I know which are most helpful?

Several drugs are available for treating essential tremor. The table below lists the available drugs and their common uses. Propranolol and primidone are the drugs used most often. Propranolol is the only drug approved for essential tremor by the US Food and Drug Administration. Evidence shows propranolol and primidone are effective treatments. However, these drugs are not helpful for 30 percent to 50 percent of people with this disorder.

Other drugs also can be helpful in treating essential tremor. Evidence shows gabapentin and topiramate can help. There also is evidence to support the use of atenolol, sotalol, and alprazolam. In addition, evidence supports the use of nadolol and nimodipine. Evidence also suggests clonazepam and botulinum toxin type A (BoNT, also known as Botox) may help. BoNT may cause temporary weakness in the affected limb.

There is not enough evidence to show if these drugs help treat limb tremor:

- Amantadine
- Clonidine
- Gabapentin
- Glutethimide
- L-tryptophan/pyridoxine
- Metoprolol
- Nicardipine
- Olanzapine
- Phenobarbital
- Quetiapine
- Theophylline

Some research suggests use of olanzapine can cause parkinsonism. However, this research did not involve people with essential tremor.

New/changed recommendations since the 2005 AAN guideline

There is not enough evidence to show if pregabalin, zonisamide, or clozapine are helpful.

Moderate evidence shows levetiracetam and 3,4-diaminopyridine probably are *not* effective for essential tremor. There is weak evidence that flunarizine may *not* be effective. Moreover, some research suggests flunarizine may cause disabling side effects. These include akathisia, dyskinesia, dystonia, and parkinsonism.

I have essential tremor. I have used several drugs to treat it, but my symptoms have not improved. Are there other treatments that I can try?

Some people with essential tremor cannot find relief from the available drugs. For these people, it is important to explore other treatment options. Two types of brain surgery, deep brain stimulation (DBS) and thalamotomy, are used to treat essential tremor. Both treatments affect the thalamus. This is a cluster of nerve cells deep in the brain.

In DBS, an electric probe (electrode) is placed in the thalamus. A pacemaker device is implanted near the collarbone. A wire from the probe is placed beneath the skin and connects to the pacemaker device. The pacemaker and probe stimulate the thalamus with electricity. This blocks the brain activity that causes tremor. Only special centers perform this procedure.

Evidence suggests that DBS may be helpful. There is not enough evidence to show if DBS helps treat head or voice tremor. DBS has fewer side effects than thalamotomy.

In thalamotomy, a lesion (cut) is made on a small part of the thalamus. The lesion interferes with the abnormal brain activity causing the tremor. This is typically done on only one side of the brain.

Evidence shows that thalamotomy surgery on one side of the brain may help treat a limb tremor that cannot be controlled by drugs. Thalamotomy on both sides of the brain is not recommended because of high risk of disabling side effects.

There is not enough evidence to show if gamma knife thalamotomy is helpful.

It is important to be aware that it is difficult to study surgical therapies in the same way as other medical therapies. It is difficult to design a study where neither the doctor nor the patient knows if the patient went through the real surgical procedure or a comparison (sham) procedure. Therefore, the evidence that DBS or thalamotomy successfully treats limb tremor is weakened by the research methods involved.

DBS and thalamotomy each pose some risk. They are used only when tremor is very disabling and drugs do not provide relief. The risk of complications may outweigh the possible benefits. Before choosing surgery, it is important to discuss possible benefits and risks with a doctor.

Which of the available treatment options is best?

Research on treatments for essential tremor is limited. No studies exist that show how effective the various treatments are long-term. In addition, no studies have compared the various drugs or surgery options. More research is needed on the benefits and risks of these treatments.

When choosing a treatment for essential tremor, discuss your options with a doctor. Be sure to learn about potential side effects and other risks. The effects of various treatments can differ from one person to the next.

Table. Drugs and their common uses

Category	Drug	Use
Cardiovascular	atenolol	high blood pressure
	nadolol	high blood pressure
	nimodipine	high blood pressure
	propranolol	high blood pressure
	sotalol	high blood pressure
Epilepsy/ Seizure	clonazepam	seizures
	flunarizine	seizures
	gabapentin	seizures
	levetiracetam	seizures
	pregabalin	seizures
	primidone	seizures
	topiramate	seizures
	zonisamide	seizures
Psychiatric	alprazolam	anxiety
	clozapine	antipsychotic
	olanzapine	atypical antipsychotic
Other	3,4-diaminopyridine	nerve function
	botulinum toxin type A	dystonia, spasticity

Based on an AAN guideline endorsed by the International Essential Tremor Foundation

*After the experts review all of the published research studies, they describe the strength of the evidence supporting each recommendation:
Strong evidence = more than one high-quality scientific study
Moderate evidence = at least one high-quality scientific study or two or more studies of a lesser quality
Weak evidence = the studies, while supportive, are weak in design or strength of the findings
Not enough evidence = either different studies have come to conflicting results or there are no studies of reasonable quality
Evidence = strength of the evidence is given in the patient summary for the 2005 guideline, which can be obtained at *www.aan.com/guidelines*

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