Spikes & Spasms

The TremorAction.org Newsletter DECEMBER 2011

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WELCOME TO THE HOLIDAY ISSUE!

Warm wishes for

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and a

Healthful New Year!

Tremor Action Network & Romert

Seeking Relief from Tremors - The Journey Continues

By Margaret Treacy

I was in my early 60's, more than 20 years ago, when I discovered that my voice was "shaky." Playing back the message I had just recorded on the answering machine of a new telephone, I was horrified to hear what sounded like the voice of a very old woman! A few weeks later, I picked up a favorite crystal bowl, only to have it fall from my hands and break into pieces. Suddenly I had a vision of my father's hands. When he was in his 70's his hands had become very shaky and he was diagnosed with Parkinson's disease (PD). For the rest of his life he had taken dopamine. Assuming I must have inherited my father's disease, I immediately called for an appointment with a neurologist. After a thorough examination he assured me that I did not have PD. He explained that in all likelihood, my father didn't either, but PD was the only movement disorder known at the time of his diagnosis. Based on a family history of tremors: my father's, those of some of his siblings and my sister's (one of my four siblings), I was diagnosed with Familial Essential Tremor.

"Where would my journey take me next? The answer came from an unlikely source: my dentist!"

My tremors (voice and hands) were tolerable without medication for a number of years, but by 2008 many of the tasks of daily living had become extremely difficult. Feeding myself was especially hard and it was worrying because I found myself unable to maintain a healthy weight. Clearly, the time had come to take action. I sought out a neurology group that included someone with experience in treating movement disorders. After a thorough examination, the diagnosis of ET was confirmed and primidone (50 mg) was prescribed. Dosage started with one quarter of a pill every night for the first two weeks, increasing in ¼-pill increments to a full dose (1 pill) after six weeks. The pills were very small so even without hand tremors I could not have split them, but the kindly pharmacist took care of that problem. I had no side effects or apparent benefits for the first six weeks, but on the day after I had taken the first full dose (Day 1 of Week 7) my face became very red and swollen, suggestive of an allergic reaction. I immediately called the on-call neurologist who told me told to stop the medication immediately. A new prescription (propranolol) was sent to my pharmacist, but on reading the Contraindications paragraph I learned that I was not a candidate because of consistently low blood pressure and low blood sugar.

At my next visit the neurologist told me the only treatment option left was botulinum toxin A (BotoxR). After hearing the pros and cons I decided to try it. Small doses were injected into the lower part of both arms. Following the first injections there was no response, but after the second and third treatments the tremor in my left arm and hand was somewhat improved. This encouraged me to continue Botox treatments and with my agreement, the injections were given in the upper arms. This change in injection sites resulted in more tremor reduction, which was encouraging, but about two weeks later a serious problem developed with my right hand. When I held out that hand with the palm down, the middle and ring fingers would hang down. I could lift them up using the fingers of my left hand for support, but they would not stay in that position. Because I am right-handed, losing the use of these two fingers presented many problems. At first I didn't connect the problem to Botox, assuming I must have unknowingly injured the right hand, but X-rays were negative and my primary care physician found nothing that would explain the problem. I called the neurologist's office and was able to move up the date of my next appointment. After assessing the situation, the doctor told me that finger weakness was a possible side effect of Botox, depending on dosage. I had been given the minimum recommended dose, but apparently it was too much for someone of my weight (about 100 lbs). My age (80) was thought to have contributed to the reaction also. Needless

to say I stopped Botox treatments immediately. Fortunately, I regained complete use of my right hand, but it took four months. Unfortunately, by then the tremor had returned to pre-treatment levels in both hands and arms.

Where would my journey take me next? The answer came from an unlikely source: my dentist! He had tried physical therapy and numerous medications to relieve the pain of tennis elbow in both arms, with no success. He told me that after just one acupuncture procedure he was pain free. He offered to give me the name of his acupuncturist and I decided it might be worth a try. Before making an appointment I checked the medical literature using PubMed (www.pubmed.com) and found some reports (mainly from China) on studies using acupuncture to treat patients with ET. At my first appointment with the acupuncturist I gave my medical history and underwent a thorough examination, then I was asked remove the shoe and sock on my left foot and lie on my back on a table. The acupuncturist inserted a very fine needle (said to be comparable in thickness to a human hair) into the soft tissue below the anklebone of my left foot. Another needle was placed in my right arm, just above the wrist. The lights were dimmed, I was told to lie still for 30 minutes and try to relax and I was left alone. Relaxation didn't come easily the first time, but on subsequent visits, once a week, I found the procedure so relaxing that I sometimes slept! Results varied from no change in tremor to improvement (diminished tremor) that might last for a few hours or even a day or two. After a few months there was definite and sustained improvement in my left arm. Although I am right-handed, I have been able to train myself to hold a spoon (or, sometimes, a fork) in my left hand. Now I can eat cereal and small pieces of meat or vegetables without dropping them, so my food intake is no longer limited to sandwiches. After about six months, the acupuncturist suggested modifying the procedure by placing the needles in the right foot and left arm, with the goal of reducing the tremor in the right arm, and I agreed. Unfortunately it soon became evident that there was no benefit from this change. Currently, my treatment includes placement of needles in the scalp, as well as in the foot and arm. Results are not consistent, but they are positive often enough that I intend to continue acupuncture as long as I can afford to.

Cost is a major problem. Most insurance companies do not cover acupuncture for tremors, and if they say they will, be sure to keep a record of your conversation. I called my company before deciding on this method of treatment and was told it would be covered if the practitioner were Board Certified and willing to provide progress notes. Then I called the acupuncturist to find out if his practice met those requirements and they did. Some weeks passed before I was ready to schedule appointments so, just to be sure, I called the insurance company again. I spoke to a different representative this time, and was given exactly the same information. They covered a portion of the charges for almost a year, but then the treatment provider and I received notification that payment had been stopped because acupuncture for ET was not covered! Given the opportunity to appeal the decision, I did. Thankfully my primary care physician was willing to advocate for me and I submitted a letter from him to the Appeals Panel. In the letter he pointed out that I am intolerant of drugs for the tremors and I had lost weight because of my inability to feed myself. Having observed that acupuncture had helped, he recommended it be continued. I won that appeal in October 2010, but this week a new Denial of Service arrived in the mail.

About the Author

Margaret Treacy was trained as a Medical Technologist. She worked in Blood Transfusion Centers in England and Canada, studying the role of blood group differences in transfusion therapy and in pregnancy. In 1957 she was recruited by a major pharmaceutical company in the United States to work in their Research Foundation and spent the next 28 years presenting seminars, nationally and internationally. She co-authored books on blood groups, two of which have been translated into five languages. After taking early retirement, Margaret had a freelance career as a medical editor. She now enjoys reading and working in her garden in Connecticut.

Symptoms Visible and Invisible
A second diagnosis

By Julian Seifter, M.D.

Spikes & Spasms Note:
Tremor Action Network is grateful to Dr. Betsy Seifter for being in agreement to share hers and Dr. Seifter's blogs. Dr. Seifter was misdiagnosed for over a year before the diagnosis of Parkinson's was made. Betsy and Julian Seifter are intimately acquainted with diagnostic confusion, and also with the problems that tremors, whatever their origin, pose. We thank the Seifters for granting permission to reprint the July 15, 2011 article for viewing only.

I wrote *After the Diagnosis* to offer stories of patients living creatively with chronic illness, as well as personal insights gleaned from my decades of living with diabetes. But it's only since publication of the book that I've really come to understand the difference between an illness that's invisible and one that shows. In the past year or two I've developed a significant tremor in my hand, which turns out not to be an "essential tremor" but Parkinson's disease.

I sometimes feel stigmatized by this symptom, as though people are making the assumption that I'm too sick to manage not just my career but even the activities of daily living. It was this kind of stigma I tried to avoid for three decades, while I kept my diabetes a secret from almost everyone I knew. These days, when I give talks about the book, I begin with my tremor: I raise my hand above the podium and say, "Can everyone see this?," sometimes shaking the other hand just for good measure. Talking about, even joking about, what's visibly wrong makes me feel more at ease, but it also seems to relax other people.

"Talking about, even joking about, what's visibly wrong makes me feel more at ease, but it also seems to relax other people."

If I'm okay about it, so are they.

The fact that people know I "have something" is even an opportunity to open up the discussion-to air the question of stigma and encourage people to be more candid about the symptoms that plague them. I can also say that having lived my way around and through one diagnosis is helping me set my course as I begin to cope with a second one. Parkinson's is scary because it's another one of those "forever" things that will never go away; indeed, it's going to get worse, though how fast and to what degree remain uncertain.

It's in the space of uncertainty that I've lived my life with diabetes, and I'm prepared to take charge of the "unknown" again. I've even felt paradoxically cheered by the diagnosis; now that the tremor has a name, I can take the right medicine, do the right exercises, eat and sleep right-actually improve my life and health, as I begin to do battle with the illness. I like to think, when something is disappointing or goes wrong, don't just fix it, make it better than it ever was. A setback is an opportunity to improve things. (I know, this sounds like, "if life throws you a lemon, make lemonade." But truisms get that name because they're true.) My aim with this new diagnosis is to be healthier than I was before, and more willing than ever to try new things, go new places, seek out new directions. I'm going to welcome uncertainty an open space in which to live.

About the Author

Julian Seifter, M.D., is one of the leading kidney specialists in the United States, an associate professor at Harvard Medical School, and the chair of the Ethics Committee on Human Research at Brigham and Women's Hospital in Boston. He is the author of *After the Diagnosis: Transcending Chronic Illness*, written with his wife Betsy. *"He's living-trying to live-a good life even as time and illness take their toll."*

Evidence-based guideline update: Treatment of essential tremor

By American Academy of Neurology

Spikes & Spasms Note:
Valuable information from esteemed clinicians Zesiewicz, Elble, Louis, et al, that can be shared with your local treating physician!

Note that the conclusions and recommendations are primarily for limb tremor with the exception of Propranolol for head tremor.

The American Academy of Neurology invited neurologists experienced in essential tremor (ET) to review ET published clinical trials between 2004 and April 2010. The evidence-based guideline is an update of the 2005 American Academy of Neurology practice parameter on the treatment of essential tremor (ET). The full report is at AAN Neurology.

Table e-1: Pharmacologic conclusions and recommendations

Recommendations for use	Treatment
Level A - should be offered to patients who desire treatment for limb tremor in ET, depending on concurrent medical conditions and potential side effects	Primidone Propranolol Propranolol LA
Level B - probably effective and should be considered to reduce limb tremor in ET	Alprazolam Atenolol Gabapentin (monotherapy) Sotalol Topiramate
Level B - probably effective and should be considered to reduce head tremor in ET	Propranolol
Level C - possibly effective and may be considered to reduce limb tremor associated with ET	Botulinum toxin A injection of forearm muscles Clonazepam Nadolol Nimodipine

Recommendations against use	Treatment
Level B - probably do not reduce limb tremor in ET and should not be considered for treatment of limb tremor in ET	3,4-diaminopyridine** Acetazolamide Isoniazid Levetiracetam** Pindolol Trazodone
Level C - possibly do not reduce limb tremor in ET and may not be considered for treatment of limb tremor in ET	Flunarizine** Methazolamide Mirtazapine Nifedipine Verapamil
Level U - Insufficient evidence to support or refute efficacy in treating ET	Amantadine Clonidine Clozapine** Gabapentin (adjunct therapy) Glutethimide L-tryptophan/pyridoxine Metoprolol Nicardipine Olanzapine** Oxcarbazepine Phenobarbital Pregabalin** Quetiapine Sodium oxybate (in ethanol-sensitive ET) Theophylline Tiagabine Zonisamide**

**The conclusion and recommendation are new or different from those in the previous guideline.

Table e-2: Surgical conclusions and recommendations

Recommendations for use	Treatment
Level C - effectively treats contralateral limb tremor in ET that is refractory to medication management	Unilateral thalamotomy DBS of the VIM of the thalamus[23-27]
Level U - insufficient evidence to support or refute efficacy in treating ET	Superiority of DBS or thalamotomy for the treatment of ET Relative advantages and disadvantages of unilateral vs bilateral DBS in the treatment of limb tremor Direct subthalamic stimulation and/or zona incerta/prelemniscal stimulation Gamma knife thalamotomy

DBS = deep brain stimulation, VIM = ventral intermediate nucleus.

CME CREDIT *EDUCATIONAL OBJECTIVE:* Readers will be able to differentiate essential tremor from secondary causes of tremor and Parkinson disease and manage it effectively

HESHAM ABBOUD, MD
Section of Movement Disorders, Center for Neurological Restoration, Neurological Institute, Cleveland Clinic;, and Assistant Lecturer of Neurology, Faculty of Medicine, University of Alexandria, Egypt

ANWAR AHMED, MD
Director, Movement Disorders Fellowship Program, Section of Movement Disorders, Center for Neurological Restoration, Neurological Institute, Cleveland Clinic

HUBERT H. FERNANDEZ, MD
Head, Section of Movement Disorders, Center for Neurological Restoration, Neurological Institute, Cleveland Clinic

Essential tremor: Choosing the right management plan for your patient

ABSTRACT

Essential tremor is a common neurologic problem seen widely at all levels of patient care. It should be differentiated from secondary causes of tremor and Parkinson disease. It can be managed with commonly used drugs. However, severe, resistant, or atypical cases should be referred to a specialist for evaluation and the possible use of botulinum toxin or deep brain stimulation.

KEY POINTS

In addition to motor dysfunction, the tremor can also have a significant psychological impact on the patient, especially since it usually gets worse in social situations.

Essential tremor is a clinical diagnosis. After a thorough review of the medical history and medication exposures, laboratory and imaging tests may be ordered to rule out a secondary cause.

The two first-line agents in drug therapy for essential tremor are the nonselective beta-blocker propranolol (Inderal) and the antiepileptic primidone (Mysoline). They can be used alone or in combination.

Botulinum toxin injection and deep brain stimulation are reserved for resistant tremor or for patients who do not tolerate drug therapy.

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Essential tremor, one of the most common movement disorders, affects about 4% of adults 40 years of age and older.[1] It is often referred to as familial tremor in patients with a family history of tremor. It has also been called benign tremor to differentiate it from tremor associated with neurodegenerative diseases, particularly Parkinson disease, but this condition is certainly not benign, as it can cause substantial functional impairment and difficulties with routine activities of daily living. The terms "essential" and "idiopathic" refer to the primary nature of the disorder and differentiate it from tremor that is a feature of a distinct neurologic entity or is secondary to a metabolic disease or drug therapy.

Successful management entails exclusion of secondary causes and careful selection of drug therapy. To date, there is no cure for essential tremor; all currently available treatments are purely symptomatic.

In this review, we outline the major diagnostic and therapeutic principles of managing essential tremor, indications for referral to specialists, and alternative and advanced therapeutic options.

CLINICAL PICTURE

Tremor is defined as rhythmic to-and-fro movement in any body part. It can be slow or fast, and its amplitude can be large and coarse, or small or even "fine." It can appear at rest, with action, or during a sustained posture. In contrast to parkinsonian tremor (which presents mainly at rest), essential tremor is

typically but not exclusively postural, kinetic, or both.

Postural tremor refers to tremor seen when the patient holds the affected limb (commonly the arm) unsupported against gravity. *Kinetic tremor* refers to tremor that appears with active movements. This is often demonstrated clinically by the finger-nose-finger test. Patients with essential tremor commonly have both postural and kinetic tremor.

The tremor commonly involves the arms, hands, and fingers.[2] Less commonly, it involves the head, the lips, the tongue, the legs, and the voice. In contrast to parkinsonian tremor, which typically affects one side of the body first, bilateral involvement is the general rule in essential tremor. However, one side of the body may be affected first, or may be more affected than the other. The frequency of the tremor ranges from 4 to 12 Hz (ie, beats per second).

The tremor usually starts in middle age and progresses slowly over time,[3] but onset in old age or childhood is also possible.[4] Both sexes are equally affected.

The tremor usually gets worse with anxiety, stress, and caffeine intake. It usually gets temporarily better with the consumption of small amounts of alcohol.

Current therapy for essential tremor is symptomatic, not curative

The functional impact of essential tremor is judged by its effect on different daily activities, especially writing, eating, drinking, dressing, manual work, and household chores.

In addition to motor dysfunction, the tremor can also have a significant psychological impact on the patient, because it usually gets worse in social situations.

Although it has long been thought that tremor is the sole neurologic sign of essential tremor, recent studies have shown that many patients have additional subtle findings, such as mild gait difficulty,[5] slight incoordination,[6] mild cognitive impairment,[7] and decreased hearing,[8] and are more likely to have anxiety and social phobia.[9]

Although different studies have varied in their findings, it is generally thought that about 50% of patients with essential tremor have a positive family history, often in a first-degree relative, suggesting autosomal dominant inheritance with variable penetrance.[10,11] Polygenetic and sporadic variants are also common.

DIFFERENTIAL DIAGNOSIS

The postural and kinetic elements of essential tremor must be differentiated from other forms of tremor, namely resting tremor (FIGURE 1)and intentional tremor. Secondary causes of postural and kinetic tremor should also be ruled out before deciding on the diagnosis of essential tremor.

Resting tremor

Resting tremor is typically an extrapyramidal sign and, when accompanied by rigidity and bradykinesia, is often part of a parkinsonian syndrome. It is most pronounced at rest when the affected body part is fully supported and stationary. The tremor tends to improve with action or posture. It usually has a "pill-rolling" character and, as mentioned, is associated with other extrapyramidal signs, such as rigidity, slowness, and, later on, postural instability.

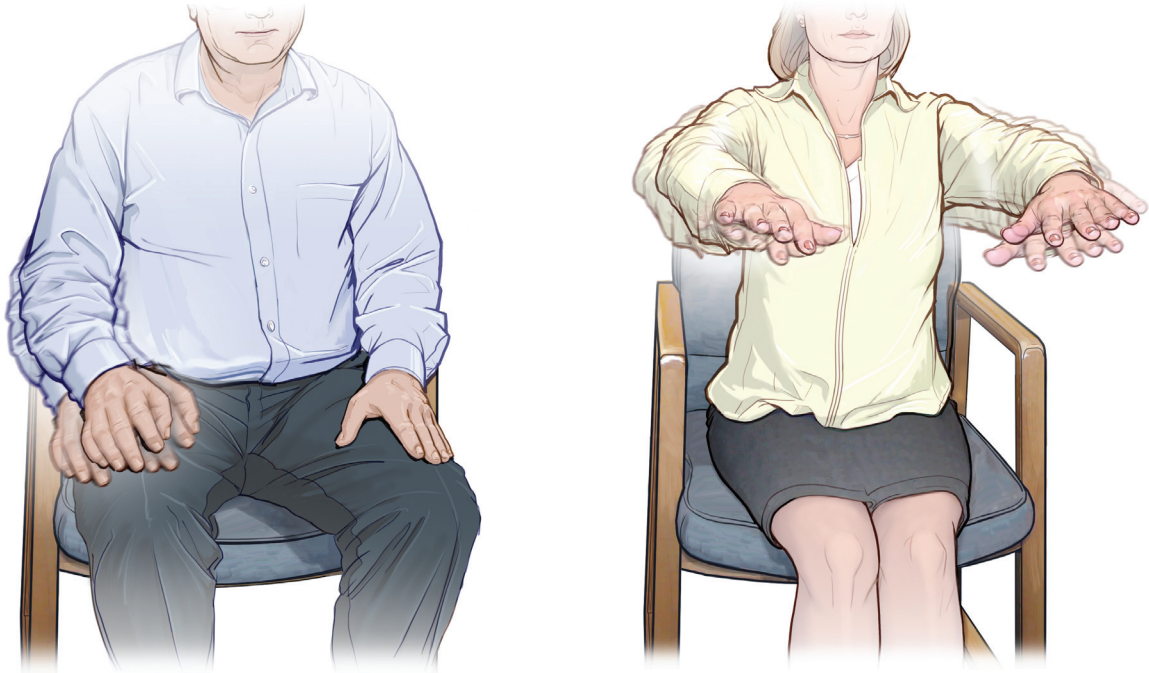
About 20% of patients with essential tremor have resting tremor. These patients usually suffer from severe or long-standing disease.[12] However, the resting element in these cases is often milder than the postural and kinetic components, and it is typically not associated with other extrapyramidal signs. Also, some patients may have both essential tremor and Parkinson disease.[13]

Intentional tremor

Pure intentional tremor is usually seen with cerebellar pathology, which includes tumors, stroke, multiple sclerosis, trauma, and spinocerebellar degeneration. The amplitude of this type of tremor increases as the affected limb approaches the final target. It can best be demonstrated clinically by the finger-nose-finger test. The frequency of intentional tremor is slow (2 to 4 Hz) and is usually associated with other cerebellar signs, such as dysmetria, decomposition, rebound, and dysdiadochokinesia (ie, the inability to perform rapid alternating movements in a smooth and coordinated manner).

About 50% of patients with essential tremor have an intentional component to their tremor,[6] or it can be mildly present in the form of a slight gait difficulty. However, in essential tremor, other features of cerebellar dysfunction are either absent or only very slight.

Essential tremor or parkinsonian tremor?



Medical Illustrator: Bill Garriott CCF ©2011

FIGURE 1. Diagnosing essential tremor requires differentiating its postural and kinetic elements from other types of tremor, particularly resting tremor. At left, the patient exhibits tremor at rest, which, when accompanied by rigidity and bradykinesia, is typical of parkinsonian tremor. At right, a patient with essential tremor exhibits postural tremor when holding the arm unsupported against gravity. About 20% of patients with essential tremor also have resting tremor, but the resting tremor is often milder than the postural and kinetic tremors.

Secondary causes of postural-kinetic tremor

Enhanced physiologic tremor. A very mild postural tremor is present in almost all people and is considered "physiologic" since it has almost no clinical significance. This type of tremor is often invisible, but when "enhanced," it can be visually demonstrated by placing a piece of paper over the stretched hands and watching the ripple from the paper.

Certain conditions can aggravate this physiologic tremor and can make it symptomatic. Common causes include anxiety, sleep deprivation, hypoglycemia, hyperthyroidism, pheochromocytoma, serotonin syndrome, and carcinoid syndrome.

Metabolic tremor. Hyperammonemia can cause tremor in patients with hepatic encephalopathy, and uremia can cause tremor in patients with renal failure. These metabolic conditions classically result in "flappy" tremor (asterixis), a special form of postural tremor characterized by jerking movements with high amplitude. It is best seen when the patient stretches out the arms and extends the wrists as if trying to stop traffic. But even though it may look like tremor, asterixis is thought to be a form of "negative" myoclonus.

Drug-related tremor. Postural-kinetic tremor can be induced by drugs, including lithium (Lithobid), valproate (Depakote), amiodarone (Cordarone), central nervous system stimulants, beta agonists (including inhalers), and some antidepressants. Tremor can also occur with alcohol or sedative withdrawal.

Psychogenic tremor. Tremor can be seen as part of a somatoform disorder commonly referred to as *conversion disorder* or *conversion reaction*. Psychogenic tremor is characterized by acute onset, commonly following a psychosocial stressor; it is often atypical, variable in frequency, amplitude, and body-part involvement, and it can readily be interrupted on examination by distracting the patient.

Neurologic disorders. The postural and kinetic elements of essential tremor may also be seen in the following neurologic conditions:

- **Holmes (rubral) tremor,** a combination of resting, postural, kinetic, and intentional tremor of low frequency and high amplitude. It usually has a proximal component and is often unilateral. It commonly is due to a lesion that involves the brainstem, eg, red nucleus, inferior olive, cerebellum, or thalamus. Common causes include stroke, prolonged hypoxia, and head trauma (including closed-head trauma with negative imaging). This type of tremor is usually associated with ataxia.[14]
- **Dystonic tremor** is predominantly postural and is associated with abnormal dystonic posturing of the affected body part, commonly the head, hands, or feet. Unlike the rhythmic oscillations of essential tremor, dystonic tremor is often irregular in rhythm.
- **Multiple sclerosis** can present with a combination of postural, kinetic, and intentional tremor. Patients usually have a clear history of recurrent neurologic deficits and show a combination of pyramidal, cerebellar, and sensory signs on examination consistent with multiple sclerosis.[15]
- **Neuropathic tremor** is seen in a small proportion of patients with peripheral neuropathy, especially demyelinating neuropathy.[16] The tremor is usually postural-kinetic and is associated with signs of neuropathy, such as a glove-and-stocking pattern of hypoesthesia, reduced reflexes, and sensory ataxia (including intentional tremor when the eyes are closed).
- **Posttraumatic tremor** can occur after severe or even mild head trauma, especially in children. It is commonly rubral, but other types have been reported, including a presentation resembling essential tremor.[17]
- **Monosymptomatic or isolated tremor.** A number of conditions related to essential tremor with location-specific or task-specific tremor have been described. These rare conditions historically have been classified as "possible essential tremor" or "essential tremor variants" but are now considered separate entities. These include task-specific tremor (eg, writing tremor), isolated head tremor, isolated voice tremor, and orthostatic tremor (tremor in the legs and trunk upon standing in place, but not when sitting or walking).[18,19]

Essential tremor must be differentiated from resting tremor, intentional tremor, and secondary causes

DIAGNOSIS IS CLINICAL

Essential tremor is a clinical diagnosis. After a thorough review of the medical history and medication exposures, laboratory and imaging tests may be ordered to rule out a secondary cause. A complete metabolic panel, including blood glucose and thyroid-stimulating hormone levels, is usually sufficient. Brain imaging or other imaging is ordered for patients with an atypical presentation.

TREATMENT IS SYMPTOMATIC

Treatment of essential tremor is symptomatic. Several drugs of different pharmacologic classes can reduce the severity of the tremor and improve function.

Choosing the appropriate treatment depends on the type of tremor and the presence of associated conditions. The response to treatment and the development of side effects guide further adjustments. The following is a brief description of the available antitremor agents.

FIRST-LINE AGENTS

Propranolol

Propranolol (Inderal), a nonselective beta blocker, is the most widely used antitremor drug and the only agent approved by the US Food and Drug Administration for essential tremor. It should be started at a low dose and titrated upward gradually. The usual starting dose is 10 mg three times daily. The average effective dose is 120 mg daily. The dose can be increased up to 320 mg if needed and tolerated.

Sustained-release preparations are equally effective and are given as a single daily dose to improve compliance.[20]

Propranolol improves tremor in 50% to 70% of patients with essential tremor and achieves an average tremor reduction of 50% to 60%.[1,21–25] Side effects include bronchoconstriction, bradycardia, hypotension, depression, impotence, fatigue, and gastrointestinal disturbances.

Other beta-blockers, such as nadolol (Corgard) and timolol, are also effective against tremor but are less potent than propranolol.[26,27] The selective beta-1-blocker metoprolol (Lopressor) may be effective and has fewer noncardiac side effects than propranolol.[28] It

can be used in patients who discontinue propranolol because of adverse effects. Atenolol (Tenormin) and pindolol (Visken) have little or no effect on tremor.[29]

A good candidate for propranolol therapy in essential tremor is:

- A patient with no known contraindication to propranolol
- A patient with hypertension, coronary heart disease, or tachyarrhythmia
- A patient with anxiety or social phobia.

Absolute contraindications to propranolol are:

- Moderate to severe bronchial asthma
- Significant bradycardia or heart block
- Symptomatic hypotension
- End-stage heart failure
- Concurrent use of a calcium channel blocker.

Relative contraindications are:

- Wheezing (eg, chronic obstructive pulmonary disease)
- Depression
- Diabetes mellitus in a patient more prone to hypoglycemia (propranolol masks the warning signs of hypoglycemia)
- Reduced sexual potency in a male patient.

Primidone

Primidone (Mysoline) is an antiepileptic drug structurally similar to barbiturates. Its antitremor effect is equal to that of propranolol, though some studies suggest it is slightly more efficacious.[30,31]

It should be started at a low dose, ie, 25 mg once daily at bedtime. The dose should then be increased gradually until satisfactory and tolerable tremor control is achieved. Most patients respond to doses of around 250 mg per day.[1,22,24–25] The dose can be increased if needed and tolerated.

Primidone reduces tremor by about 50% to 60%.[1,22,24–25] Side effects include sedation, dizziness, fatigue, nausea, and depression, as well as ataxia and confusion in severe cases.

A good candidate for primidone in essential tremor is:

- A patient with no known contraindication to primidone
- A patient with contraindications to propranolol
- A younger patient
- A patient with epilepsy.

Absolute contraindications to primidone include:

- Confusion or dementia
- Oral anticoagulant therapy with difficulty controlling the International Normalized Ratio (primidone is a potent enzyme inducer).

Relative contraindications to primidone in essential tremor are:

- Depression
- Alcohol abuse
- Ongoing therapy with sedating drugs
- Ataxia or vertigo.

SECOND-LINE AGENTS

Other antiepileptics

Topiramate (Topamax) is a broad-spectrum antiepileptic shown to be significantly effective against essential tremor.[32] It is usually started at a single daily dose of 25 mg and increased gradually to the most effective dose, usually around 300 mg.

Side effects include reduced appetite, weight loss, cognitive dysfunction, and paresthesia.

Favorable candidates include patients who are epileptic or overweight. Contraindications include cognitive impairment and low body weight. It is also not recommended in children so as to avoid any possible negative effect on cognitive development. In rare cases, topiramate has been reported to cause significant visual disturbances.

Anxiety, stress, and caffeine can aggravate essential tremor

Gabapentin (Neurontin) is an antiepileptic that is now more often used as a symptomatic treatment for neuropathic pain. Studies have suggested a beneficial effect on essential tremor,[33,34] but some investigators have questioned its efficacy.[35]

Like other antitremor agents, it should be started at a low dose, ie, around 300 mg, and escalated gradually until the tremor is controlled. The usual effective dose is 1,200 mg.

Gabapentin is generally well tolerated, and side effects such as dizziness, drowsiness, sedation, and unsteadiness are rare and usually mild.

The favorable candidate is a patient with associated neuropathy or multiple comorbidities. Gabapentin has also been reported to alleviate neuropathic tremor.

Contraindications are minimal and include intolerability or hypersensitivity to the

drug. It also should be avoided in patients at a high risk of falling.

Levetiracetam (Keppra) is a novel antiepileptic effective against partial seizures. Studies have shown contradictory results regarding its antitremor effect. One double-blind, placebo-controlled study demonstrated significant reduction in essential tremor with 1,000 mg of levetiracetam.[36] However, its effect on tremor is believed to be short-lived, and some studies argue against its efficacy.[37] It has a favorable side-effect profile and is generally very well tolerated. It can be used as an adjunct to other antitremor agents and is preferred for patients with coexisting partial seizures or myoclonus.

Benzodiazepines. Minor tranquilizers are often used to control tremor, especially in coexisting anxiety or insomnia. Alprazolam (Xanax) is the one most widely used for this indication.[38] It can be started in a dose of 0.25 mg once at bedtime and increased gradually up to 0.75 to 2 mg. Clonazepam (Klonopin) is particularly useful for orthostatic tremor, a variant of essential tremor characterized by tremor of the legs and trunk upon standing.[39]

Common side effects of benzodiazepines include sedation, cognitive dysfunction, hypotension, respiratory inhibition, and addiction after prolonged use. In the elderly, they can lead to confusion and disinhibition and can increase the risk of falling. They should be avoided in the elderly and in alcoholic patients and those with a high risk of substance abuse.

Stopping benzodiazepines should be done gradually to avoid withdrawal symptoms, including aggravation of tremor.

Propranolol improves tremor in 50% to 70% of patients with essential tremor

THIRD-LINE AGENTS

Clozapine

Clozapine (Clozaril) is a novel antipsychotic drug with no extrapyramidal side effects. It has been reported effective in essential tremor and drug-induced tremor,[40,41] but the results of these early studies have not been confirmed.

Clozapine is started as a single daily dose of 12.5 mg and is increased up to 75 mg or 100 mg. It is an attractive option for patients with coexisting psychosis, bipolar disorder, or chorea. Its main side effects are sedation, salivation, weight gain, hypertension, diabetes, and seizures.

One especially serious side effect is agranulocytosis. This potentially fatal effect is rare, occurring in about 1.3% of patients receiving this drug. Weekly monitoring of the white blood cell count is mandated during treatment with clozapine, and this has made clozapine a less attractive option for the routine treatment of essential tremor.

Mirtazapine

Mirtazapine (Remeron) is a novel antidepressant widely used in Parkinson disease as both an antidepressant and a sleeping aid. Case studies have reported efficacy in both essential tremor and parkinsonian tremor,[42] but controlled studies have not confirmed this.[43] Mirtazapine is a reasonable option in patients with coexisting depression or insomnia. It is usually given as a single bedtime dose of 15 to 30 mg.

Other drugs

Studies of other agents for the treatment of essential tremor—eg, carbonic anhydrase enzyme inhibitors, calcium channel blockers, isoniazid (Tubizid), clonidine (Catapres), phenobarbital, and theophylline—have yielded highly contradictory results. Thus, they are not recommended as first- or second-line agents for essential tremor.

SPECIALTY-LEVEL CARE

When essential tremor does not respond to drug therapy or the patient cannot tolerate drug therapy, the patient should be referred to a center specializing in movement disorders for more advanced treatment options, ie, botulinum toxin injection and deep brain stimulation surgery.

Botulinum toxin

Botulinum toxin type A has been studied for the treatment of essential tremor with variable degrees of success. It has been effective in reducing hand tremor in essential tremor, but without a concomitant improvement in functional disability.[44] This limited functional improvement has been attributed to the development of muscle weakness after injection of the neurotoxin. This has also raised questions about unintentional unblinding when interpreting study results. Therefore, most clinicians restrict its use to focal forms of tremor

such as voice tremor,[45] head tremor, and task-specific tremor.

Side effects are limited and temporary and include muscle weakness, pain at the injection site, dysphagia (when injected for head or voice tremor), and a breathy vocal quality (when injected for voice tremor). Botulinum toxin injection is the treatment of choice for focal dystonia, and therefore would be a good option for dystonic tremor.

Thalamic deep brain stimulation

This technique involves stereotactic implantation of a stimulation lead in the ventral intermediate nucleus of the thalamus. The lead connects via a subcutaneous wire to an intermittent pulse generator, implanted subcutaneously in the infraclavicular region. The stimulation lead produces continuous stimulation of the ventralis intermedius nucleus that is functionally equal to lesional surgery, thus antagonizing the relay of tremor signals at the thalamus.

The battery of the pulse generator must be replaced every 4 to 7 years depending on usage and stimulation parameters. Battery replacement can be performed with minor surgery at the infraclavicular region.

Thalamic deep brain stimulation is indicated for patients with severe, disabling essential tremor who have tremor resistant to drug therapy or who cannot tolerate drug therapy.

The procedure has been shown to provide benefit in 90% of patients, with more than an 80% improvement in tremor severity and functional impact.[46–49] Deep brain stimulation is effective against tremor affecting parts of the body other than the limbs, including the head; an exception to this is voice tremor, which usually does not improve dramatically.

The procedure can be done unilaterally or bilaterally, depending on symptoms. Patients with asymmetrical tremor and those at risk of side effects can undergo unilateral surgery. Bilateral treatment is recommended for patients with symmetric tremor or significant head tremor, or who are young and healthy.

Surgical risks include brain hemorrhage and infection. Side effects of the stimulation include paresthesias, paresis, imbalance, dysarthria, and, in rare cases, dysphagia.

CHOOSING THE BEST MANAGEMENT PLAN FOR YOUR PATIENT

The choice of treatment may be challenging, given the multiple treatment options and the variability of tremor severity from one patient to another. The following guidelines can be used to help make this decision.

All patients should be advised to reduce caffeine intake, to have sufficient hours of sleep, and to avoid stressful situations.

Patients with minor, nondisabling tremor can be left untreated if the tremors are not bothersome or if the patient prefers not to pursue active treatment.

In patients who have bothersome tremor only when anxious or in certain social situations, give propranolol or alprazolam (or both) to be taken as needed. Relaxation techniques and meditation are also useful for these patients.

Patients with constant bothersome tremor should be started on either propranolol or primidone based on the patient's profile and propensity to develop side effects from each of these drugs. The dosing should be optimized gradually according to the patient's response and the drug's tolerability.

The choice of treatment may be challenging, given the multiple options and the variability of tremor severity from one patient to another

If essential tremor is not sufficiently controlled with one first-line agent (propranolol or primidone), try combining the two first-line agents if the patient finds it tolerable.

A second-line agent can be added to either of the first-line agents or to the combination of both if tremor control is not yet sufficient. A second-line or third-line agent can also be used as the primary treatment if both first-line agents are contraindicated or intolerable. Combining two or more second- and third-line agents is another option. The choice of second- or third-line agent should be guided by the patient's characteristics and comorbidities in relation to the agent's side effects and contraindications as detailed in the above section.

Patients should be referred to a movement disorders specialist in cases of resistant tremor, intolerance to oral medications, severe disability, and atypical presentation. Types of tremor known to be poorly responsive to oral medications (eg, head tremor, voice tremor) deserve a specialist evaluation if they contribute significantly to the patient's morbidity.

The usual specialist treatment of severe

voice tremor and head tremor is botulinum toxin injection. Patients with resistant and disabling hand tremor are evaluated for thalamic deep brain stimulation.

Patients with residual disability despite medical and surgical treatment should be referred for occupational therapy. Occupational therapy can improve quality of life through the use of special utensils, pens, computer gadgets, and arm weights, among other devices.

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***ADDRESS**: Anwar Ahmed, MD, Center for Neurological Restoration, U-2, Cleveland Clinic, 9500 Euclid Avenue, Cleveland, OH 44195; e-mail ahmeda@ccf.org.*

New Medicare Five-Star Special Enrollment Allows for Year-Round Changes, But Options Limited, Allsup Finds

Allsup explains new enrollment period; other enrollment options after annual open enrollment ends

Belleville, Ill. - December 7, 2011 - Although Medicare annual enrollment ends today for most, a new year-round special enrollment period starts Dec. 8 for people interested in enrolling in five-star Medicare Advantage or prescription drug (Medicare Part D) plans. However, options are limited as few five-star plans are available, based on an analysis by Allsup, a nationwide provider of Medicare plan selection and Social Security Disability Insurance (SSDI) representation services.

"The five-star special enrollment period is designed to help people improve their coverage, encourage quality improvements and reward plans that Medicare reports as doing a good job," said Adrienne Muralidharan, senior Medicare specialist for the *Allsup Medicare Advisor®*. The *Allsup Medicare Advisor* is an impartial Medicare plan selection service that helps people understand and choose the most affordable and appropriate Medicare coverage for their healthcare needs. (Allsup does not accept fees or commissions from insurance providers and is not a Medicare plan provider.)

Starting Dec. 8, those enrolled in a plan that has 4.5 stars or fewer can switch to a Medicare Advantage plan or prescription drug plan in their area with a five-star rating. Medicare plans can have a rating from one (low) to five (high) stars. Individuals can only switch plans once a year using the five-star special enrollment period.

However, as of Nov. 30, there were only eight five-star Medicare Advantage contracts, covering 14 plans, available in a total of 10 states, with one available in each of the following seven states: California, Colorado, Hawaii, Illinois, Maine, Massachusetts and Oregon; two five-star plans available in both Iowa and Washington; and three five-star plans available in Wisconsin. Additionally, each of the following eight states has one five-star prescription drug plan available: Iowa, Minnesota, Montana, Nebraska, New York, North Dakota, South Dakota and Wyoming.

"Initially, most people will not have access to a five-star Medicare plan. Those who do need to be careful when deciding to change their plan based on a single rating," Muralidharan said. "Physician participation, prescription drugs covered and cost are among other factors that can be just as important to consider."

Specifically, Muralidharan noted, those considering changing to a five-star plan should:

· **Understand the rating system**. The five-star rating is based on information Medicare gathers from member satisfaction surveys, the plans and healthcare providers based on the previous year's performance. So a plan that performed well in 2011 may not necessarily provide the same quality coverage in 2012. Also, the rating system does not rate new plans that may be available. "The rating also does not tell you if the plan is a better fit to your specific needs than the current plan you're using," Muralidharan said.

· **Understand the effects of changing plans.** Under the five-star option, individuals can drop prescription drug coverage by changing from a Medicare Advantage plan with drug coverage to a Medicare Advantage plan without it. However, they would then have to wait until the next annual enrollment period (Oct. 15 - Dec. 7) to enroll in prescription drug coverage for the following year, and they may face a late-enrollment penalty.

Additional Enrollment and Switching Options During the Year

· Other special circumstances allow individuals to join or change plans, as outlined below. A chart on Medicare special enrollment periods can be found at Special Enrollment Periods.

· **Disenrollment period:** From Jan. 1-Feb. 14, individuals can leave a Medicare Advantage plan and enroll in traditional Medicare. If they had Part D coverage under their Medicare Advantage plan, they can enroll in a prescription drug plan; but they can't add drug coverage if they previously did not have it.

· **Disability**: Individuals who are determined by the Social Security Administration to be disabled become eligible for Medicare 24 months after they begin receiving cash SSDI benefits. They can join three months before to three months after this. Some exceptions exist for specific health conditions.

· **Turning 65**: Seniors become eligible for Medicare at age 65, and they can enroll in their selected plan three months before, the month of and three months after their 65th birthday.

· **Loss of group health coverage**: Individuals eligible for Medicare who have employer coverage have eight months following the month their employer coverage or employment ends (whichever is first) to enroll in Medicare.

· **Moving out of the plan's service area**: People moving permanently out of their plan's service area are allowed to switch plans at any time during the year.

· **Nursing home residents**: Someone who moves into, lives in or is leaving a nursing home can enroll in a new plan anytime during the year.

· **Fraud**: Individuals who learn they were enrolled in a plan without their knowledge can contact their state health insurance program (SHIP) anytime to receive help with changing their plan.

· **Low income**: Recipients receiving "extra help" can switch plans as needed to ensure they are getting the most cost-effective, appropriate coverage possible. This includes individuals eligible for Low-Income Subsidy (LIS), both Medicare and Medicaid at the same time (dual-eligible) or Supplemental Security Income (SSI) benefits.

For an evaluation of Medicare options, call an Allsup Medicare Advisor specialist at (866) 521-7655 or go to **Allsup Medicare Advisor**.

About the Author

Allsup is a nationwide provider of Social Security disability, Medicare and Medicare Secondary Payer compliance services for individuals, employers and insurance carriers. Founded in 1984, Allsup employs nearly 800 professionals who deliver specialized services supporting people with disabilities and seniors so they may lead lives that are as financially secure and as healthy as possible. The company is based in Belleville, Ill., near St. Louis. For more information, go to **Allsup**.

Bowen Therapy and a MedicinEvolution Perspective on Tremors

By Chris Corrales

Spikes & Spasms Note:
"The emotional damage of essential tremor (ET) is startling. Stress, fatigue and anxiety can worsen ET." - Tremor Action Network ***Quality of Life DVD***

Perhaps a doctor recently diagnosed you with tremors, and that set you in search of ways to address your symptoms. Or perhaps you have been coping with the condition for years, and you are looking for alternative treatments. Perhaps bodywork can help. Like many chronic conditions, individuals report various experiences that cause and relieve the symptoms of tremors. But, whether one knows the cause or not, two things are certain; everyone wants relief, and only you know what works and what does not work for you.

Bowen bodywork offers a holistic approach to the treatment of tremors. Like other conditions, tremors have an emotional component. Physical symptoms can spring from emotional stimuli, very often stress. Your living story of beliefs, habits and preferences can shape the physical body. In turn, health conditions tell yet another tale of these internal conversations. By reverse messaging, Bowen bodywork relieves somatic manifestations of emotional realities, especially stress.

Emotions such as frustration, fear, anxiety, fixed outcomes, hopelessness, or anger can cause stress. In turn, stress can cause harm. When stress challenges you, your body communicates that stress to your muscles and molecules in a flare up. Inner turmoil manifests physically. By restructuring the body energetically, Bowen therapy can help relieve that suffering, both physically and emotionally.

Bowen bodywork is not massage. Bowen protocols move your neurological and musculature systems around in such a way as to send messages to your brain and nervous system to rebalance. By moving your physiognomy in different directions from the way stress commands it to move, Bowen therapy promotes an environmental healing. The space between moves and the intervals between sessions allows your body time so that it can process the new messages and rebalance.

The three integrals of Bowen work, compassion, acceptance, and gratitude, also play an important role. They provide new emotional messages that nourish your spirit. In turn, these nourishing messages allow your body to receive the treatment and grow from it - in your own time and place. An open mind in itself heals. The state of mind it produces protects your inner vitality from stress and strain. By helping you let go of fixed outcomes, you can enjoy life more, giving up control, and do things like take naps, all of which allow deep and restful healing. Being gentle on yourself, letting things run their course, and being grateful for who and what you are, enable you to receive the treatments and feel the changes in your body wash over you like a warm bath.

About the Author

Chris Corrales, the founder of MedicinEvolution, located in Dublin, CA, has practiced bodywork for 13 years. He was cured of several debilitating conditions with Structural Integration and other alternative medicines. He focuses on helping men and children of all ages and with varying complaints. He specializes in Rolf Structural Integration, the Bowen technique, and integrates other techniques that he has learned through the years. You can contact Chris at **http://www.medicinevolution.com**.

Tremor Action Network does not express or imply that the Bowen Technique (Bowen Therapy) is meant to replace medical treatment. Advice should be sought from your treating physician before making any decision that may affect your medical condition.

Tremor Action Network

The Bay Area Brain Bee
Saturday, February 4, 2012

The first ever free to participate **Bay Area Brain Bee** will be held on Saturday, February 4, 2012 at California State University East Bay. Complete details about the event will soon be available.

The question and answer contest is open to enrolled high school students – grades 9 through 12. The purpose of the competition is to motivate students to learn about the brain, and be inspired by the knowledge gained to pursue careers in neuroscience.

The spelling bee-like format consists of answering questions about the brain and nervous system. Elimination is based on 3 incorrect answers. The 1st place winner is the student that answers all the questions correctly.

Registration
Registration is on a first-come basis. The competition is limited to the first 40 students from a minimum of 3 Bay Area high schools, that email or USPS mail the completed Registration Form.

No recording device is allowed during the competition. In addition, parents/guardians, family members, friends and other people in the audience may not write down questions and answers.

Brain Bee Study Material
Questions and answers are from the Society for Neuroscience ***Brain Facts*** book, available in a free PDF File.

Brain Facts is also available in a free Audio File.

Prizes
The first place winner will receive a cash prize to help with expenses related to traveling to Maryland to compete in the National Brain Bee. The second and third place finishers will receive gift cards.

Assistance
Please do not hesitate to email kwelker@tremoraction.org and/or call 510-681-6565, if you need further assistance with the registration process.

PO Box 5013 Pleasanton, CA 94566 / 510.681.6565 Fax: 925.369.0485
Website: www.tremoraction.org / Email: staff@tremoraction.org

Seattle surgeon continues to show success of non-surgical intervention for Essential Tremor

By Sierra Hansen

Spikes & Spasms Note:
*Tremor Action Network is grateful to Sierra Hansen for inviting the organization to participate in the Swedish Medical Center live web stream of an actual DBS procedure for the public to watch and engage with Drs. Jennifer Witt, Ryder Gwinn and Ronald Young, and nurse practitioner Peggy Shortt. You can view the videos and comments at **DBS Live**.*

Dr. Young educated the audience on Gamma Knife, presenting comparisons with DBS.

Essential Tremor (ET) is the most common movement disorder in the United States, affecting an estimated 10 million individuals. Unfortunately, ET remains under-diagnosed and untreated for the vast majority of sufferers, most likely because current therapies are less than effective or are highly invasive. Pharmaceutical solutions work for approximately 60 percent of patients, and the efficacy of the drugs reduces over time. The other option, deep brain stimulation (DBS), requires surgery to implant a small device in the patient's brain. While DBS benefits 80 percent of those treated, some of the others have complications that prevent them from undergoing the surgery.

In the last few years, scientists have made significant progress using Gamma Knife thalamotomy (GKT) to treat ET and other tremor conditions.

Gamma Knife thalatmtomy (GKT) is a non-invasive procedure that uses highly-targeted radiation to pinpoint and treat overactive cells in the thalamus region of the brain. This procedure is a non-surgical, minimally invasive alternative that uses radiation to treat ET. The success rates for GKT are equivalent to DBS, and the procedure has shown to have fewer side effects than other surgical treatments.

A recent study published in the Journal of Neurosurgery called **"Gamma Knife thalamotomy for treatment of Essential Tremor: long-term results"** by Dr. Ronald Young and colleagues studies the long term outcome of 172 patients who underwent GKT therapy for ET. This study provides compelling evidence that Gamma Knife thalamtomy provides a safe alternative to other surgical options and is ideal for people who cannot qualify for or undergo invasive surgery.

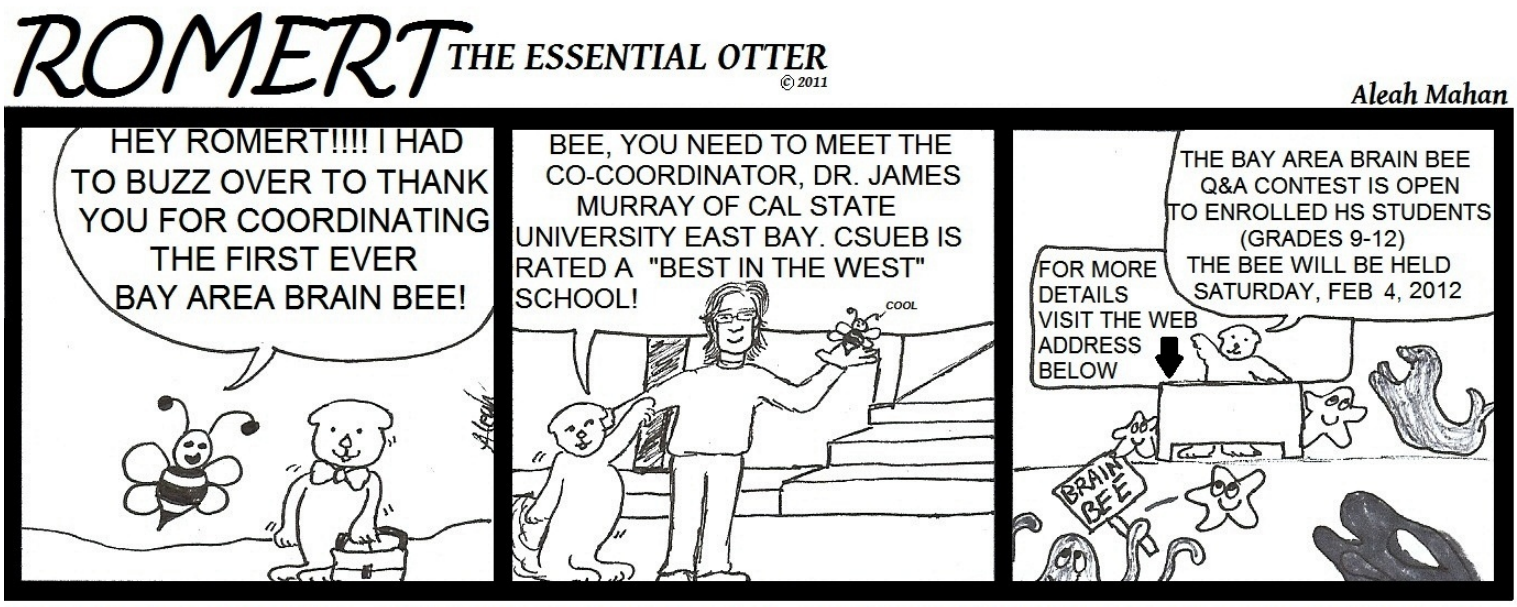
If you are interested in finding out more information about GKT and other treatment options for ET and other tremor conditions, please contact the Swedish Neuroscience Institute in Seattle at 206-320-2800 or online at **Swedish Neuroscience Institute**.

About the Author

Sierra Hansen is with The Fearey Group, a public relations firm located in Seattle, Washington. She is part of a team of communication professionals that work to raise awareness of Swedish Health Services, one of the largest medical providers in the Seattle metropolitan area through a variety of media outreach, social media programs and community events. She brings an additional passion to raising awareness about the different treatments for essential tremor after watching her mother-in-law suffer from the condition for the past few years.

Romert's PSA

The Essential Otter Advocate http://romert.blogspot.com



THE BAY AREA BRAIN BEE - SATURDAY, FEBRUARY 4, 2012. FOR MORE INFORMATION VISIT US ON THE WEB AT:
www.tremoraction.org/pdfs/The_Bay_Area_Brain_Bee.pdf