What is tremor?
Tremor (a shake) is a rhythmical, involuntary oscillatory movement that affects a part of the body, for example the hand. In people with Parkinson’s, tremor can occur at rest, for example while lying in bed when the body is relaxed and fully supported. It can also occur on action, for example while trying to hold a magazine steady (termed postural tremor), or during a movement, for instance writing (termed kinetic tremor).

The most characteristic tremor of Parkinson’s is called a ‘pill-rolling’ rest tremor as it resembles the deliberate action of rolling a pill with the thumb and index finger. Rest and action tremors commonly occur in people with Parkinson’s, with an estimated incidence of about 70% and 80% respectively.

Why have I got tremor?
If you have got Parkinson’s, the likelihood is that your tremor is the result of Parkinson’s. Tremor is often the sign that leads to a medical consultation and, thus, a diagnosis of Parkinson’s.

Research has demonstrated that Parkinson’s tremor arises in abnormal circuits within the brain and is then emitted to various parts of the body through the nervous system.

What is the difference between tremor and essential tremor?
All living humans have tremor. This can become obvious if the person is anxious, frightened or angry, when it is termed enhanced physiologic tremor. Hence, the common phrases ‘shaking with anger’ or ‘shaking with nerves’.

There are also many, over a hundred, different abnormal causes of tremor. The most common of these is essential tremor (ET), which typically causes an action tremor of the arms. At times, essential tremor can be difficult to distinguish from Parkinson’s tremor. In these circumstances, a Dopamine Transporter Scan (DaTSCAN) can be helpful, as the scan is normal in essential tremor and abnormal in Parkinson’s. There is also an ongoing debate about whether people with ET have an increased risk of developing Parkinson’s disease, which has yet to be resolved.

If I haven’t got a tremor now am I likely to get one?
About 60–70% of people with Parkinson’s have tremor when they first consult a doctor about their symptoms. It is estimated that tremor occurs in about 70% of people with Parkinson’s disease. Thus about 30% of people with Parkinson’s do not get abnormal tremor and are deemed to have the ‘ akinetic-rigid’ form of Parkinson’s.

Will my tremor get worse as my Parkinson’s progresses?
Typically, Parkinson’s tremor starts in the fingers of one hand and naturally worsens over the first few months or years, often spreading up the arm as it becomes more severe. Frequently, the tremor spreads to affect the foot, on the same side of the body. Occasionally, Parkinson’s tremor starts elsewhere, for example in the foot, then it may spread up the leg and then into the arm.

After several years, Parkinson’s tremor usually spreads to affect the other side of the body. When this occurs, the tremor is often less severe than on the side first affected and this asymmetry normally persists. The tremor can also spread to involve the jaw, lips, tongue or trunk.
Does anything worsen my tremor?
Just like normal physiologic tremor worsens with anxiety, anger or fear, so does Parkinson’s tremor. However, this is temporary and the tremor will settle down as the heightened emotions subside. In some cases, the first symptom of Parkinson’s is tremor that appeared during a heated exchange or period of stress, for example after surgery for an unrelated condition.

Parkinson’s tremor can be caused or worsened by many different drugs, the most common culprits being the major tranquilizers, as well as some of the anti-nausea and anti-dizziness medications (which have anti-dopaminergic actions). Some anti-asthma drugs, lithium and the anti-epileptic sodium valproate can also exacerbate tremors. It is worth looking at the product information sheet that comes in the packet with each medication that you take in order to see if that particular medicine can cause or worsen tremor. However, these medications may be necessary for you, so do not stop taking them without first discussing it with your doctor.

Does anything make my tremor better?
In the early stages of the illness, some people with Parkinson’s can suppress their hand tremor by squeezing or rolling a ball, pen or similar object in the hand. This can be a useful tactic during business meetings or meals out. However, medical treatment will eventually become necessary.

Usually, Parkinson’s tremor can be suppressed effectively by medical treatment. Levodopa (Madopar, Sinemet or Stalevo) can reduce or stop Parkinson’s tremor quite effectively if taken regularly. The tremor returns as levodopa wears off or if it is withdrawn. Often, an inadequate dose of levodopa is the cause of failure to suppress Parkinson’s tremor. However, for some people with Parkinson’s, levodopa is not an effective therapy for tremor. The reason for this is not clear, particularly as in the same individual the other ‘cardinal features’ of Parkinson’s, namely rigidity and slowness of movement, may respond well to levodopa. A current opinion is that this maybe because tremor, unlike rigidity and slowness of movement, is not a direct effect of the dopaminergic deficiency present in Parkinson’s.

The direct-acting dopamine agonist medications, including those drugs that are not ergot derived (pramipexole, ropinirole, rotigotine, apomorphine) and those that are (pergolide, cabergoline, bromocriptine) also have anti-tremor effects when used alone or in combination with levodopa. However, the ergot-derived dopamine agonists (pergolide, cabergoline, bromocriptine) have been associated with damage to the cardiac valves so monitoring is essential if they are used.

The anti-muscarinic medications (trihexyphenidyl, procyclidine, orphenadrine, benztropine) still have a role in the management of tremor in Parkinson’s, particularly for patients who are intolerant of dopaminergic drugs or in whom these drugs have failed to control their tremor. However, the main problem with this class of drug is that they are associated with worsening cognitive function and so require careful use.

Beta-blocking drugs, for example propranolol, which are frequently used to treat high blood pressure, can also reduce tremor in Parkinson’s. Propranolol can be used regularly or taken in small doses, as required prior to
stressful meetings or social engagements, in order to reduce tremor and the anxiety that it can produce.

Is there a cure for tremor?
Currently, there is no cure for Parkinson’s tremor. However, various forms of surgery can have a valuable role to play in greatly alleviating tremor in Parkinson’s. This form of surgery is termed stereotactic surgery and is a type of ‘keyhole’ surgery performed on the brain to destroy or jam the abnormal circuits within the brain creating tremor in Parkinson’s. In the past, most procedures were destructive, with the neurosurgeon burning a minute hole in an area of the brain called the thalamus. This procedure, a ‘thalamotomy’, would greatly reduce the strength of or effectively abolish the tremor on the opposite side of the body. However, as Parkinson’s tremor typically goes on to affect both sides of the body, a further thalamotomy would be required on the other side of the brain in time. The problem with performing a second thalamotomy is that there is a 30% risk of causing a marked speech impediment.

Thus, over the last decade, the technique known as deep brain stimulation (DBS) has evolved, as this permits surgery to be performed on both sides of the brain more safely. DBS involves passing small electric currents through electrodes implanted within the brain. In addition to the development of DBS, the neurosurgeons’ prime target moved from the thalamus to the subthalamic nucleus (STN). The reason for this switch is that DBS of the STN, improves tremor, rigidity, slowness of movement and drug-induced dyskinesia (also allowing a marked reduction in medication), whereas thalamic stimulation mainly improves tremor.

Consequently, 20,000 DBS implantation operations have now been performed worldwide. This raises the question: Why doesn’t everyone with Parkinson’s have deep brain stimulation for tremor? The answer is that there are serious risks to implanting electrodes in the brain. The main dangers involved with DBS surgery are a 1–4% risk of an intracranial bleed, which may cause a stroke, and an approximately 1 in a 1,000 risk of death.

Also, surgery is not suitable for everyone. The risks may be increased in much older people and those with other conditions that might cause complications. Most surgeons will not operate on anyone who is experiencing confusion or psychosis, has experienced a stroke or has dementia or severe depression.

Further contacts
The National Tremor Foundation is a UK-registered charity, part of the Neurological alliance of charities, to help people with any form of tremor. The contact details are:

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