

## *Vagus Nerve Stimulation*

Patrick Merida – URI – BME 282

For a substantial amount of people, dealing with depression is a problem, and try as they may, no drug treatment or electrotherapy seems to work. What can you do then?

Thankfully, the development of Vagus Nerve Stimulation has been shown to send signals to parts of the brain dealing with mood, motivation, sleep, appetite, and other symptoms of depression. Vagus nerve stimulation can also treat various conditions such as OCD, Parkinson's disease, and other conditions, but the main focus of this will be the treatment of depression.



A Disc is placed surgically under the skin over the collar bone and sends a signal to the Vagus nerve using flexible wires, and the signal is then relayed to the targeted portions of the brain. The disc is programmed and reprogrammed with a wand held over the skin. Memory Cards record intensity and Frequency. The battery life of the device is 8-12 years so replacement is not a large issue.

The correlation between our organs and emotions is not truly understood. It is believed that depressed patients may have weakly regulated signals coming from their hearts and organs. The VNS electrodes augments these signals for regular intervals.

As far as case studies, there have been many promising results. One of the most outstanding being the revival of a man trapped in a semi-vegetative state for 6 years, now able to talk in coherent statements and respond to pain, emotion.

Over 3,000 depression patients have been wired and over 1500 are showing remarkable benefits. Over half of OCD patients showed marked long term improvement. Also, starting in 2009, a scientist is focusing on using VNS to assist Parkinson's patients on a global scale.

However, the surgery does not come without risks such as infection, hemorrhage and stroke. Some effects of electrical stimulation, if not adjusted, can be a jolting sensation, numbness or tingling in the face or hand, dizziness, muscle spasms, slurred speech, or double vision.

In the surgery, the neurosurgeon drills one or two dime-size holes in the skull and inserts an electrode a few inches into the brain. A connecting wire from the electrode runs under the skin to a battery implanted near the collarbone on the left side.

If side effects arise, the dosage of current can be altered accordingly to fit the needs of the patient. The cost is around \$9,000 and covered by most insurance but is advised to only be used after exhausting other methods of treatment that are non-invasive. Another unfortunate effect is that any treatment that may involve medical imaging, like MRI or certain Ultrasounds can heat up the wire and cause damage to the Vagus nerve so the patient needs to be sure to inform their doctors about that.

This should not be mistaken to be some kind of cure for depression however. This will only work as long as it is used, and should the device stop working, the treatment will fail as well.

### **Works Cited**

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