Neuronetics vs. MagVenture Fact Sheet

Per-Treatment Cost

Neurostar costs $70-$100[1] per treatment while MagVita costs $4.38 per treatment. The MagVita cost includes coil replacement after 2,250 treatments (average estimate) as well as an individual treatment cap.

Treatment Comfort and Operator Safety

Researchers at Harvard University have documented[2] that the click noise from the coil with MagVita is significantly lower than with all other systems tested, including the Neurostar. Using a 10Hz stimulation and 80% machine output, only the MagVita's sound pressure level was below the OSHA permissible threshold (at 5cm distance from the treatment coil).

A recent study[3] shows that shorter short duration magnetic pulses are perceived as a little more uncomfortable than pulses with a longer duration. The Neurostar system delivers pulses lasting 180µs while the MagVita system delivers 280µs pulses (55% longer duration).

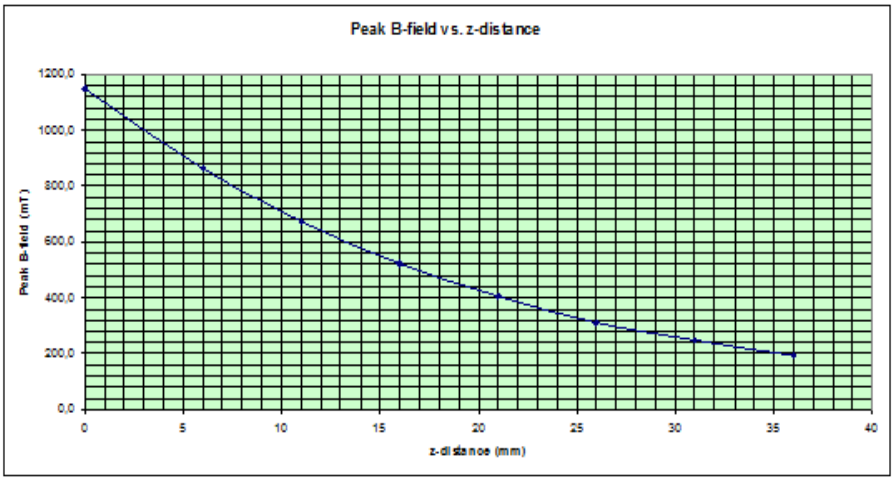
Treatment Accuracy, Efficacy and Consistency

Contrary to recent claims by Neuronetics[4] the MagVita TMS Therapy® System is not a 'Generic TMS' offering, but a dedicated depression therapy system. MagVita was conceptualized in 2009 together with researchers heading up the large (360 subjects) multicenter randomized clinical trial on TMS for depression performed by the Department of Veterans Affairs. The system configuration used for this trial has evolved into the current, FDA cleared MagVita system.

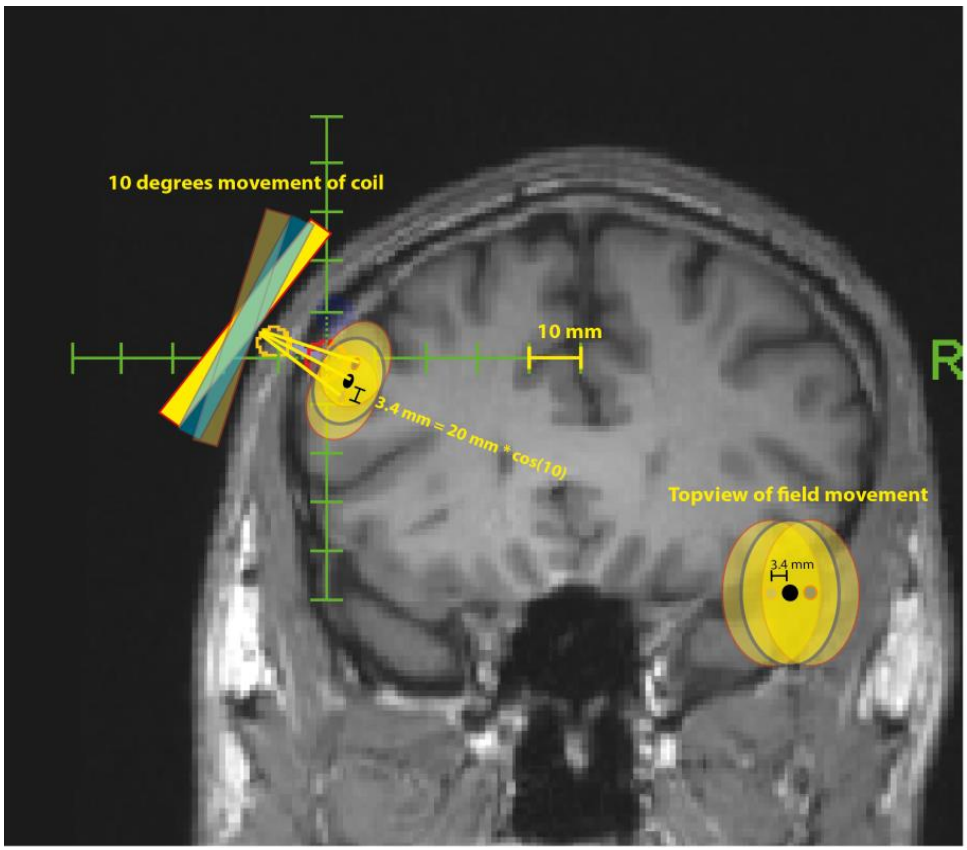
To obtain FDA clearance (k150641) for the MagVita system it was documented that coil placement is accurate and that coil re-positioning (from treatment to treatment) is consistent.

The error margin of the repeatability of the MagVita Therapy coil positioning system was theoretically calculated to +/-5mm when comprising detection errors of anatomical fix points, ruler resolution errors, and visual precision errors. This was empirically tested with "amateur" operators revealing an average distance (error) from the target spot of 2.4 mm. This test is in line with the anticipated accuracy and is in line with the accuracy of the Neurostar. For an overview of the MagVita coil positioning system watch this video: https://www.youtube.com/watch?v=Fec6P7D71VQ

While coil positioning is important to obtain good and consistent treatment results, its importance should not be exaggerated. Neuronetics has recently claimed that a 1mm increase in distance between the coil and target leads to a 40% reduction in stimulation power. This may hold true for Neuronetics' iron core coil design, but for the MagVita copper winding-based coils the effect is not a 40% reduction but a 1-2% reduction as illustrated by the graph below. The graph documents peak B-field (magnetic field) vs. distance from the coil surface (for Cool-B65, the MagVita treatment coil). From a clinical standpoint 1%-2% reduction is insignificant.



With respect to the coil angle, Neuronetics claimed that if the angle is off by 10%-15% it will lead to reduction in treatment dose by 41%-47%. Simple geometry contradicts this claim. As illustrated below, a 10° offset in coil angle leads to a 3.4mm displacement of the center of the pulse at the relevant treatment depth. Again, from a clinical standpoint this is insignificant. The 3.4mm displacement will not move the magnetic field outside the middle frontal gyrus of the prefrontal cortex target in the DLPF treatment of depression.



Clinical Documentation and 'Track Record'

MagPro stimulators and coils have been on the world market since 1991 and thousands of systems are presently in use for diagnostics, research and therapy. The current line of stimulators and coils used for the MagVita system has been available since 2002 and are thus proven workhorses. On a worldwide basis, well over 1 million treatments have been performed with MagPro equipment.

Clinical trials performed: MagVenture has relied on Neuronetics' clinical data for our FDA 510(k) clearance. We have demonstrated technical equivalence and the FDA therefore considers the Magvita 'substantially equivalent' also in terms of clinical performance.

However, while not having conducted a large multicenter RCT, researchers around the world have performed many clinical trials for depression using the MagPro system. More than 30 such trials have been performed and documented, with close to 1,900 subjects treated. In addition, several large naturalistic studies have been performed with MagPro. These trials and studies document the efficacy and safety of our systems.

Patient Throughput

The Neurostar and MagVita system both offer and a 19 minute protocol which is FDA-cleared. There is no extra cost to use the 19 minute protocol with the MagVita system.

Financial Results

MagVenture is privately held with a strong history in the global market since 1991. Neuronetics continues to require additional funding.

https://www.crunchbase.com/organization/neuronetics

The Future

Clinical trials: Seven ongoing or planned clinical trials with the Neurostar are listed on www.ClinicalTrials.gov – four of which are exploratory (20-50 patients) and three with 100 or more patients (Adolescents, suicidal crisis). 15 trials with MagVenture equipment are ongoing or planned including a large randomized trial for cocaine addiction by NIDA using Theta Burst stimulation (NCT02927236) and a large late-life depression trial by CAMH in Toronto (NCT02998580).

As new protocols for depression and as new indications receive FDA clearance, MagVenture offers multiple coil geometries and upgrade paths.

References

1. *Senstar*
2. *Dhamne et al, Brain Stimulation 7 (2014) 432-434*
3. *Peterchev et al, Brain Stimulation 2016 – Online preprint*
4. *YouTube videos, May 2016*