ALL NEUROMODULATION TECHNIQUES HAVE EQUAL EFFICACY
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Vagus nerve stimulation (VNS), deep brain stimulation of the anterior nucleus of the thalamus (ANT-DBS) and responsive intracranial neurostimulation (RNS) all have Class I-evidence of effectiveness in well-designed randomized clinical trials.

During the blinded phases of large RCTs, seizure frequency reduction compared to baseline was higher for DBS of the ANT and RNS than for VNS. This effect disappears in the unblinded phases at 1 year follow-up. Further improvement appeared over the years during non-blinded phases. This improvement may be due to improvement of stimulation parameters, the effect of true neuromodulation or chronic beneficial effects of repetitive stimulation. Adjustments in other therapies could be made, but this effect has been consistently reported in all of the large neurostimulation trials.

While no direct head-to-head comparative trials of VNS, DBS or RNS are available any one might be viewed as more efficacious than another, depending on which metric used,

At present there is no clinical evidence to recommend one technique over the other. Particular subgroups of patients might benefit more from one technique than from the other.

With regard to non-inavsive neurostimulation devices information is scarce and no definite conclusins on long-term and comparative efficacy can presently be drawn.

Better understanding of the mechanisms of action, identifying subpopulations or optimal candidates, optimization of stimulation parameters and identifying best stimulation targets and methods should lead to higher efficacy and overall better outcome.

Further research should be carried out to explore other potential benefits of implantable neurostimulation devices e.g. reducing seizures severity.

In the future, as more treatment become available, comparing efficacy between stimulation modalities (DBS of other targets, non-invasive neurostimulation) will become increasingly important.