

CENTRE FOR NEUROMODULATION

WHY RTMS?

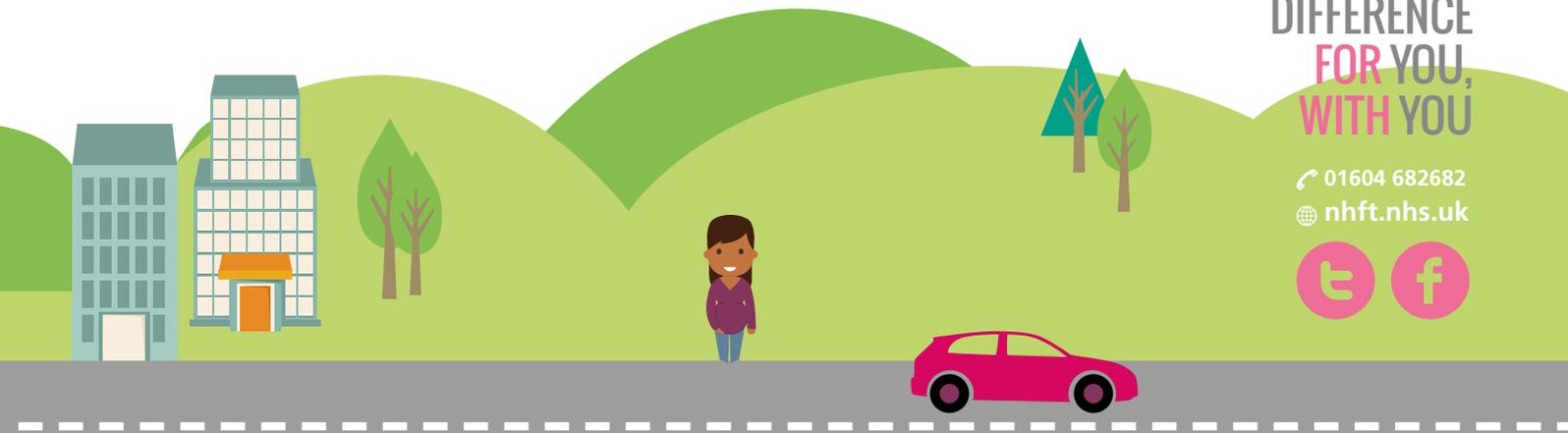
An estimated 20-40% of people with depression do not recover following existing standard treatments. The main treatment for people with depression is antidepressant medication; however not everybody responds. This failure of response to antidepressants is regarded as treatment resistant depression. People with treatment resistant depression (TRD¹) are more likely to commit suicide. Neuromodulation in the treatment of TRD can make significant improvements to both the patient's illness and the cost of health care.

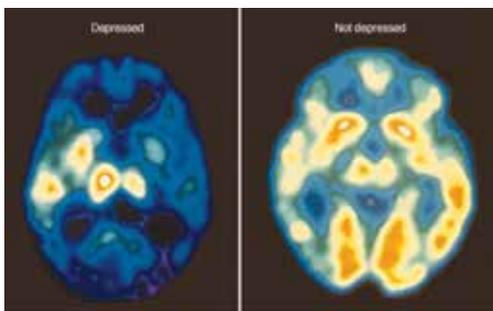
¹Treatment Resistant Depression:- A clinically diagnosed bipolar or unipolar depressive episode that has not responded to treatment which includes at least 2 antidepressant agents of adequate treatment dose, in addition to a psychological treatment in at least 1 modality (Conway, George & Sackeim, 2017).



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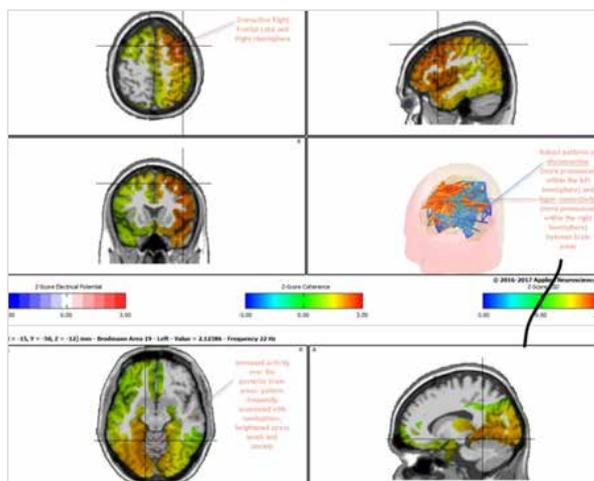




The image on the right shows a functional magnetic resonance image of a non-depressed brain versus a depressed brain on the left. The amount of yellow and orange is indicative of blood supply and can be seen that in the non-depressed brain blood supply is equal on the right and the left and generally distributed widely throughout the brain. This is in contrast to the depressed brain which shows a difference between the right and left hand side as well as a marked reduction in perfusion throughout the brain.

In England, the National Institute for Health and Care Excellence (NICE 2015) issued guidance for the use of rTMS recommending it as a treatment for depression. There are only a handful of clinics offering rTMS in the UK and CfN is the only one offering rTMS, ECT, TBS, tDCS and Ketamine at this scale.. In 2008, it was approved by the United States Food and Drug Administration (FDA) for treatment of patients suffering from treatment resistant depression. rTMS has been extensively used in the United States since 2008 and is also used in many countries within Europe as well as Australia, China and Japan.

Professor O'Neill-Kerr co-wrote the Royal College of Psychiatry position statement on rTMS (2017) which recommends 'rTMS is now an established safe and effective treatment option for treatment resistant depression.' In 2018 Professor O'Neill-Kerr co-wrote the amended position statement for the RCPsych to read that a qualified rTMS Technician or equivalent with adequate training and competencies can administer the rTMS and monitor for side effects during the treatment.



The CfN is also able to facilitate quantitative EEG mapping via a private clinic in London for a small charge; this provides patients the opportunity to receive targeted bespoke TMS, maximising the effectiveness of the treatment sessions. This may be of particular benefit to patients with restricted availability.



Professor O'Neill-Kerr presenting at the Royal College of psychiatrists ECT accreditation service annual meeting in 2019

To date, CfN has treated in excess of 250 patients and have demonstrated better remission and response rates to those quoted in international studies.³ We have recently published data in the Open Journal of Depression that relates to a cohort of 144 patients treated with rTMS between 2015 and 2017. For the whole cohort of patients, the Hamilton Rating (HAM-D) remission rate was 25.5% and the response rate 40.4%. The CGI remission rate in our group of patients was 52% and the response rate 51.1%. Downer (Downer et al. rTMS of the Dorsomedial Prefrontal Cortex for Major Depression, Brain Stimulation (2015) 208-215) quotes the most recent international studies in rTMS having 30-35% remission rates and combined response rates of 50-55%. As the Hamilton rating scale does not measure the improvements that we see in rTMS, the clinical global impression scale (CGI) is a more useful scale to measure the differences in people before and after rTMS and using this measure we see no symptoms at the end of treatment in half of the patients referred to us.

Cohort size	HAM-D (remission rate)	HAM-D (positive response rate)	CGI (remission rate)	CGI (positive response rate)
144group rTMS L/ RDLDFC	25.5%	40.4%	52%	51.1%
Comparator	Remission rate	Combined remissions and response rates		
Downer comparison	38%	50%	Used Beck rating scale which we	
185 group cTBS/iTBS R/LTBS				

² https://www.rcpsych.ac.uk/docs/default-source/about-us/who-we-are/ectcommittee-repetative-transcranial-magnetic-stimulation-statement-may18.pdf?sfvrsn=695e93be_2

³ <http://doi.org/10.4236/ojd.2019.81003>