time frame. Outcomes did not appear to be significantly different from the overall cohort.
Conclusion: The PD-DBS cohort in our institution is reflective of national trends. Preliminary data suggest underrepresented groups do not appear to significantly differ from the larger cohort. The number of underrepresented cases remained stable annually, despite the number of years the therapy has been available and anticipated increased awareness with competition/innovation in neuromodulation. Our findings highlight the need to better understand barriers, referral patterns, and community engagement needs, to effectively improve access to advanced therapy in underrepresented populations.
Research Category and Technology and Methods
Clinical Research: 1. Deep Brain Stimulation (DBS)
Keywords: Deep Brain Stimulation (DBS), Parkinson's Disease (PD), Racial Disparities, Outreach programs

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Abstract key: PL- Plenary talks; S- Regular symposia oral; FS- Fast-Track symposia oral; OS- On-demand symposia oral; P- Posters

P3.157

UTILIZING NEUROMUSCULAR FORCE RECORDING AS A NOVEL PROXY FOR FUNCTIONAL ASSESSMENTS OF BRAIN OR PERIPHERAL NERVE STIMULATION IN A MOUSE MODEL

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Abstract
Mice are excellent model organisms to study human diseases as a handful of genetic tools are available to manipulate their genome to simulate most human diseases. Since the mice genome is similar to that of humans (only less than 10 among approximately 4,000 genes studied are different), mice can be used as a tool to study molecular pathogenesis and develop novel therapeutic interventions. Although mouse models have been used in developing brain and peripheral nerve stimulation modalities, functional assessments are very difficult to carry out due to the size of the animal. Artifacts generated through any intervention often contaminate recordings of evoked electromyogram (EMG), a common index used to quantify the results of brain or peripheral nerve stimulation in human experiments. This is because the small size of a mouse enables stimulation signals to travel easily from target sites to EMG electrodes. To eliminate this issue, we designed a 3D printable fixation frame that integrates a pair of miniaturized force sensors, allowing us to quantitatively measure the change of stimulation induced muscle force in vivo of a mouse during a stimulation session. By analyzing recordings from mechanical force instead of from electrical signals, i.e., EMG, corticospinal and peripheral contributions of electrical or magnetic stimulation can be accurately measured after appropriate procedures are being applied to a restrained mouse under anesthesia. Studies using this mouse model will provide pilot results for planning and design of future clinical trials that involve brain and peripheral nerve stimulation.
Research Category and Technology and Methods
Basic Research: 26. Other Methods
Keywords: Mouse model, Artifacts, Brain stimulation, Peripheral nerve stimulation

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P3.158

ACCELERATED INTERMITTENT THETA BURST TRANSCRANIAL MAGNETIC STIMULATION IS A SAFE AND EFFICACIOUS TREATMENT FOR ADOLESCENTS WITH DEPRESSIVE SYMPTOMS

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Abstract
Background: Intermittent theta burst stimulation (iTBS) has been shown to be a safe and effective therapy for depression in adult populations and more recently, newer protocols of accelerated transcranial magnetic stimulation (TMS) have become popularized due to the fast-acting effects. Previous literature has shown that iTBS in adolescents is safe and that TMS may be more effective in younger individuals, but it has yet to be explored in great detail with accelerated protocols.
Methods: This case series describes three patients seen in the context of an outpatient clinic setting at Acacia Mental Health. The patients were treated for depressive symptoms which were confirmed by a staff psychiatrist. Self-reported mood surveys as assessed by the patient health questionnaire-9 (PHQ-9), were administered pre-treatment and post-treatment. The accelerated TMS treatment protocol administered to these patients varied in the brain region(s) targeted, TMS machine output intensity, protocol laterality, number of sessions per day, and total number of sessions. The TMS treatments were delivered via a MagVenture MagPro R30 system (MagVenture A/S, Denmark) equipped with a MagVenture Cool-B65 A/P coil.
Results: All three cases were prescribed distinct accelerated protocols; two achieved self-reported remission and one achieved response as measured by the PHQ-9. All patients tolerated accelerated iTBS sessions without significant adverse events, demonstrating that this is a safe and effective treatment for adolescents with MDD.
Conclusion: In these adolescent patients, accelerated TMS protocols were tolerated and showed meaningful clinical effects. These cases support rationale for future clinical applications of accelerated TMS in adolescent populations. Future studies should examine larger cohorts to gain a deeper understanding of accelerated TMS safety and efficacy in adolescents.
Research Category and Technology and Methods
Clinical Research: 10. Transcranial Magnetic Stimulation (TMS)
Keywords: Transcranial Magnetic Stimulation, Theta Burst, Adolescence, Depression

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Abstract key: PL- Plenary talks; S- Regular symposia oral; FS- Fast-Track symposia oral; OS- On-demand symposia oral; P- Posters

P3.159

TMS TARGETS FOR MULTIPLE SCLEROSIS RELATED DEPRESSION DERIVED USING A PRECOMPUTED FUNCTIONAL CONNECTOME

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Abstract
Background: Depression in multiple sclerosis (MS) is poorly responsive to conventional pharmacotherapy, highlighting the need for clinical TMS trials. However, it is unclear if MS depression is suitable for circuit-targeted therapeutics. We developed a technique for identifying single treatment targets based on distributed brain circuit maps derived from symptom-causing brain lesions. We then tested this technique using published maps that define circuits connected to lesions associated with greater depression, which have been shown to predict TMS outcomes.
Methods: We analyzed a recently-published "MS depression circuit map" based on the normative connectivity of brain lesions that increase risk of depression in MS (Siddiqi et al., Nature Mental Health 2023). We constructed a precomputed functional connectome using mean whole-brain functional connectivity of 292,019 brain voxels across 1,000 participants. We compared each voxel's connectivity map to the MS depression circuit map using spatial correlations. Voxels whose connectivity maps most strongly correlate with the MS depression circuit map are identified as potential TMS targets. As a comparator, we conducted the same analysis using a previously published depression circuit map derived from stroke lesions and penetrating head trauma (N=461), which has previously been shown to reveal better TMS targets (Siddiqi et al., Nature Human Behaviour 2021).
Results: The peak lesion-derived TMS target for MS depression was at MNI coordinates (-38,44,34). This target was within 1cm of the TMS target