sleep problems improve with rTMS, we hypothesized that self-reported sleep onset latency will decrease, and sleep duration will increase.
**Participants and Methods:** All participants met inclusion criteria for MDD diagnosis and completed a full course of TMS treatment (N=470; Mean age=53.45, SD=13.73). The sample was mostly male (81%) and ethnically diverse: 77.7% non-Hispanic White, 13.3% Black Americans, 1.9% Asian, 0.2 % Asian Indian, and 1.9% other ethnicities. Sleep problems were assessed using the following questions at the pre and post treatment stages: the number of minutes it takes to fall asleep and duration of sleep each night.
**Results:** A Wilcoxon matched-pairs signed-rank test was conducted to determine whether there was a difference in sleep onset latency and hours of sleep per night between pre and post intervention. The results indicated a significant difference in time to fall asleep between pre and post treatment (pre-treatment M = 1.19, SD = 0.99, post-treatment M = 0.93, SD = 0.91; $z = -5.01$, $p < .001$. In addition, there was a significant increase in the minutes of sleep per night in pre (M = 6.11, SD = 2.07) compared to the post treatment (M = 6.32, SD = 1.77), $z = -2.56$, $p = .010$.
**Conclusions:** Reduced sleep is known to negatively impact mood, cognitive ability, work performance, and immune function (Besedovsky et al., 2012; Killgore, 2010; Massar et al, 2019; Vandekerckhove & Wang, 2018). Similarly, longer sleep onset latency can cause an individual to enter the first sleep stage later than expected and complete fewer sleep cycles. The results of the present study show the effectiveness of rTMS in decreasing sleep onset latency and increasing the duration of sleep. Given the comorbidity and bidirectionality between sleep disturbances and mood disorders (Fang et al., 2019; Palagini et al., 2019), further researching treatments such as rTMS to improve sleep as a means to also improve mood is crucial. We propose acquiring knowledge about sleep attributes as an essential part of clinicians' work early on in the rTMS treatment in order to monitor an individual's global functioning level in light of improved sleep.

**Categories:** Neurostimulation/Neuromodulation
**Keyword 1:** neuromodulation
**Keyword 2:** sleep
**Keyword 3:** depression

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## 74 A Phase I Trial of Accelerated, High-Dose Repetitive Transcranial Magnetic Stimulation to Improve Cognition in Amnestic MCI

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**Objective:** Repetitive transcranial magnetic stimulation (rTMS), a non-invasive neuromodulation therapy most widely used in depression, has shown evidence of secondary benefits for cognition in both neurologic and neuropsychiatric conditions. The recent development of more efficient stimulation protocols, such as accelerated high-dose intermittent theta burst (iTBS)-rTMS, has substantially reduced treatment burden by shortening the treatment course by >50%. This study aimed to establish the safety, feasibility, acceptability, and preliminary efficacy of iTBS-rTMS as a tool for bolstering cognition in individuals with amnestic mild cognitive impairment (aMCI).
**Participants and Methods:** Twenty-four patients with aMCI were enrolled in an open-label phase I trial of iTBS-rTMS; 2 withdrew prior to initiating treatment due to personal circumstances. All participants had received a diagnosis of MCI due to possible AD from a healthcare provider (i.e., neurologist or neuropsychologist) and met actuarial neuropsychological criteria for aMCI. This sample of older adults (range: 61.5-85.2 years, M = 74.1, SD = 5.71) was predominantly White/non-Hispanic (n = 23; Black/non-Hispanic: n = 1), roughly half female (n = 13), with a college education (range: 12-20 years, M = 15.9, SD = 2.5). Participants received 24 sessions of iTBS-rTMS to the left dorsolateral prefrontal cortex over 3 days (8 sessions each, lasting roughly 2 hours per day). Participants rated their perceptions and experience of common side effects during and after each treatment session as well as retrospectively at post-treatment and

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4-week follow-up. They completed structural and functional brain MRI, neuropsychiatric evaluations, and neuropsychological assessments before and after treatment and were administered a subset of these measures at 4-week follow-up. MoCA scores were used to monitor for adverse neurocognitive effects, and the fluid cognition composite score from the NIH Toolbox Cognition Battery was used to test preliminary efficacy.
**Results:** We achieved a high retention rate (95%), with 21 of the 22 participants completing all study procedures. There were no clinically significant adverse neuroradiological, neuropsychiatric, or neurocognitive effects of treatment. Participant reports indicated high tolerability and acceptability, with a modal rating of 0 (on a scale from 0=not at all to 10=extremely) for six common side effects (i.e., headache, pain, scalp irritation, facial twitching, fatigue, fear/anxiety), assessed both during and after each treatment session. They reported very low desire to quit despite some participants rating the treatment as moderately tiring. We observed significant, large effect-size (d = 0.98) improvements in fluid cognition from pre- to post-treatment.
**Conclusions:** Our findings support the safety, feasibility, and acceptability of iTBS-rTMS treatment in patients with aMCI. Further, although not explicitly dosed for efficacy, we provide preliminary evidence of improved fluid cognition as a function of treatment, highlighting the potential of this treatment for improving trans-domain cognitive impairment. These promising results can directly inform future trials aimed at optimizing treatment parameters, broadening the indication to other MCI subtypes, and testing the augmentation of established cognitive rehabilitation interventions when combined with rTMS.

**Categories:** Neurostimulation/Neuromodulation
**Keyword 1:** neuromodulation
**Keyword 2:** mild cognitive impairment
**Keyword 3:** treatment outcome
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## 75 Mood and Quality of Life after Responsive Neurostimulation (RNS) in Epilepsy Patients

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**Objective:** Poor mood and quality of life is common among patients with medically intractable seizures. Many of these patients are not candidates for seizure focus resection and continue to receive standard medical care. Responsive neurostimulation (RNS) has been an effective approach to reduce seizure frequency for nonsurgical candidates. Previous research using RNS clinical trial participants has demonstrated improved mood and quality of life when patients received RNS-implantation earlier in their medically resistant epilepsy work-up (Loring et al., 2021). We aimed to describe the level of depression and quality of life in adults with medical resistant epilepsy, treated with RNS, presenting to an outpatient clinic.
**Participants and Methods:** This pilot study was conducted among 11 adult epilepsy patients treated with RNS at the epilepsy specialty clinic at Baylor College of Medicine. Ages of participants ranged from 18-56 (M=32.01, SD=12.37) with a mean education of 12.43 (SD=0.85). The majority of the participants identified as White (White=72.2%; Hispanic/Latino/a=14.3%, Other=7.1%). We also present pre- and post-RNS preliminary results of a subset of 4 patients for whom pre and post implantation data was available. Depression symptoms were assessed through the Beck Depression Inventory, 2nd Edition (BDI-II) and quality of life was determined using the Quality of Life in Epilepsy (QoLiE-31).
**Results:** Patients reported minimal symptoms of depression (M=5.45, SD=4.03) and good overall quality of life (M=71.18, SD=14.83) after RNS. Participants' scores on their overall quality of life ranged from 50 to 95 (100=better quality of life). The QoLiE-31 showed high scores on emotional wellbeing (M=69.45, SD=14.56) and cognitive functioning (M=65.36, SD=16.66) domains. Post-hoc analysis revealed a significant difference in the cognitive functioning domain of QoLiE-31 before (M=44.75, SD=12.58) and after (M=51.0, SD=11.58) RNS implantation(t(3)=-3.78, p=0.016. Additionally, overall QoLiE score approached statistical significance when comparing pre-RNS (M=44.75 SD=9.29) to post-

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