

## **Pilot feasibility study with randomised control of dual site Theta burst Transcranial Magnetic Stimulation (TMS) for Methamphetamine use disorder: Preliminary results of the TARTAN study**

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**Introduction:** The feasibility of Transcranial Magnetic Stimulation (TMS) for moderate to severe methamphetamine (MA) use disorder in a public outpatient Drug and Alcohol (D&A) setting is examined. TMS is a non-invasive means to stimulate neurons in superficial areas of the brain. Recent years have seen a growth in the use of TMS to investigate modulation of neural networks involved in substance use disorders.

**Method:** This study randomised participants to active TMS and Sham (placebo) arms. Participants received Theta burst Stimulation (TBS) to the left dorsolateral prefrontal cortex and orbitofrontal cortex (12 sessions over 4 weeks). Participants were offered weekly counselling and an opt-in neuroimaging sub-study. Feasibility measures including recruitment, treatment adherence, patient experience, as well as outcomes such as reported substance use and cognitive testing were examined.

**Results:** 72 referrals were received during the 44 week study period. 19 progressed to consent and 14 started and completed study treatments. All completed at least the minimum 6 of 12 eligible TMS sessions. TMS was well tolerated with 14 adverse events reported, the majority being minor (e.g. headache) or unrelated to the study intervention.

**Discussions:** The use of TMS in MA use disorder in a public outpatient setting was feasible and acceptable for patients. Many referrals were lost before screening or had TMS exclusion criteria (e.g. history of seizures, bipolar disorder, psychosis). Those that started, completed most treatments.

**Implications for Practice:** We demonstrate that TMS for MA use disorder is feasible, if resource intensive, in a public outpatient D&A setting.

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