Nevada State Assembly — AB304

AN ACT relating to mental health; requiring the Department of Health and Human Services to create a pilot program to collect and analyze data on transcranial magnetic stimulation and electromagnetic brain pulse treatment under certain circumstances; and providing other matters properly relating thereto.

1. Total Cost for Data Collection per year over the two-year biennium:

Scope:

- **Data Collection** will be from two clinics in the State of Nevada (Reno and Las Vegas) offering ElectroMagnetic Brain Pulse (EMBP) treatment for the conditions outlined in AB304 including: substance use and opioid use disorders (SUD & OUD), post-traumatic stress disorder (PTSD) and addiction disorder related to gambling (GA).
- **Data Analysis** for both clinical efficacy and fiscal cost-benefit outcomes will be done.
- **Reporting** of findings to the appropriate state agency will be provided.

Estimated Costs *Per Year*:

- **Personnel (Data analysts, researchers, administrative coordination):** **$27,000.00**
  - 5% staff time per participating clinic: 2 x $5,000=$10,000.
  - 20% staff time at BHLF: 1 x $17,000=$17,000.
- **Technology/Software (Secure data management systems, statistical analysis tools):** **$ 5,000.00**
- **Clinic Compensation (Data sharing support costs):** **$12,000.00**
  - Overhead cost for each participating clinic: 2 x $6,000 = $12,000
- **Report Coordination & Production** (interim & final) Writing, publication, presentation: **$ 5,000.00**

Total Estimated 1-Year Cost: **$49,000.00**

Total Estimated 2-year cost: **$98,000.00**

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2. The following clinics are licensed providers of EMBP:

USA

NV: Reno, Las Vegas
CA: Long Beach, Los Angeles (3), Fresno, Redding, Shasta
UT: St Georges
WA: Yakima
MN: Rochester . . . Mayo Clinic: Long-Covid Trials
US Air Force Bases . . . 4 locations

International

Canada: Montreal, Quebec
Mexico: Monterey, Mexico City
Panama: Panama City
Taiwan: Taipei, Kaoshung

Data for the purposes of this bill will be collected from two clinics located in Nevada.

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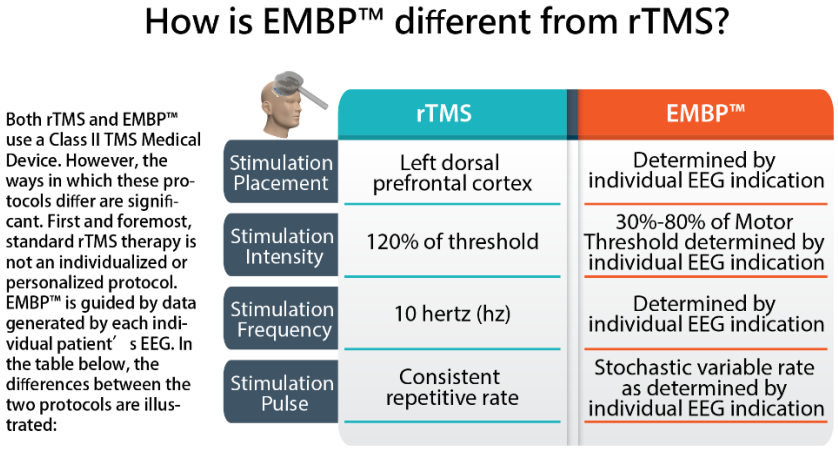
3. Differences Between the 2008 TMS Protocol and the EMBP-Driven TMS Protocol



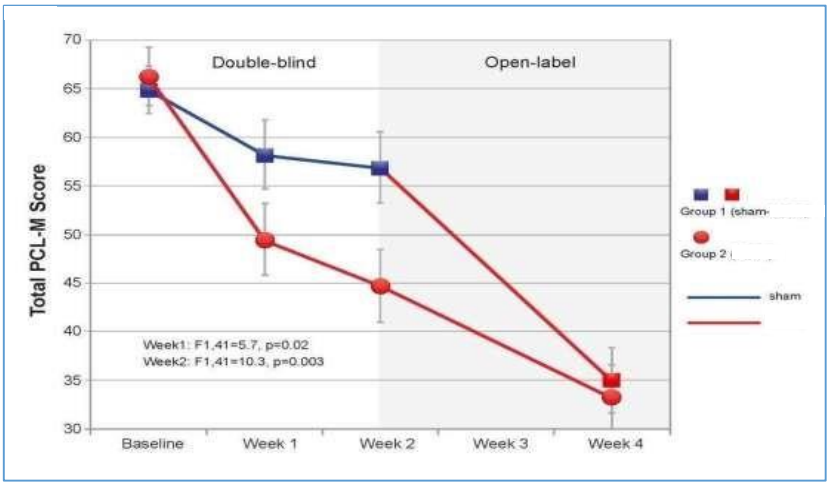
*ElectroMagnetic Brain Pulse (EMBP) – individualized, pulse-matched Transcranial Magnetic Stimulation (TMS).

4. Relevant Scientific References

EEG-Guided Individualized Magnetic Resonant TMS* Clinical Trial for Veteran PTSD Overview (2015)

- **Study Design**: Clinical trial of EEG-guided Magnetic Resonant TMS in veteran PTSD.
- **Participants**: Veterans with VA clinical diagnoses of PTSD as measured by the PTSD Checklist-Military Version (PCL-M).
- **Treatment Protocol**: 20 sessions using frequencies guided by each individual participant's pre-treatment EEG assessment.
- **Outcomes**:
    - **PTSD:** Significant improvements observed as measured by PTSD Checklist-Military Version (PCL-M).
      Neurophysiological Changes: Post-treatment EEG objective data showed increases in global alpha power (p=0.013) and decreases in delta power (p=0.028), indicating normalization of brain activity patterns associated with PTSD:
        - 63% reduction in PTSD symptom severity (PCL-M).
        - 96% reported improved quality of sleep.
        - VAS Pain Scores reduced from 7.4 to 2.7.
    - **SUD:** Retrospective analysis showed the following changes in SUD and OUD :
        - 25% voluntarily weaned completely off opioids.
        - 86% voluntarily decreased opioid use.
        - 77% voluntarily decreased alcohol use.
          (All data points still holding at 1-year marker)
- **Safety Profile**: Treatment well-tolerated. No significant adverse effects reported.
- **Conclusion**: Study suggests EEG-guided individualized TMS is a promising non-invasive treatment modality for PTSD, significant symptom reduction and normalization of EEG patterns and simultaneous reduction in SUD and OUD.

Reference: "Magnetic Resonance Therapy Improves Clinical Phenotype and EEG Alpha Power in Post-Traumatic Stress Disorder." *Trauma Monthly*. 2015 Nov;20(4):e27360. doi:10.5812/traumamon.27360.



During double-blind phase of PTSD trial (Baseline to Week 2), statistically significant differences were observed between treatment and sham group. After week two, open label treatment was provided to all subjects = 20 sessions for all.

TMS without Individualized EEG Guidance Study for Veteran PTSD Overview (2021)

- **Study Design**: A multisite, retrospective cohort study conducted across various VHA facilities.
- **Participants**: Diagnosed with major depressive disorder (MDD), with substantial subset also exhibiting PTSD.
- **Treatment Protocol**: 30 sessions standard TMS targeting left dorsolateral prefrontal cortex. No EEG guidance.
- **Outcomes**:
    - **MDD**: Among veterans receiving an adequate dose
        - Response Rate: 41.4%
        - Remission Rate: 20.0%
    - PTSD: Veterans with comorbid PTSD
        - Clinically Meaningful Reduction: 65.3%
        - No Longer Meeting PTSD Criteria Post-Treatment: 46.1%
- **Safety Profile**: Side effects consistent with known safety profile of TMS, with high treatment retention rates observed.
  Conclusion: Study supports effectiveness and safety of TMS for veteran MDD and PTSD using standard clinical approaches.
  Reference: "Prefrontal Transcranial Magnetic Stimulation for Depression in US Military Veterans: A Naturalistic Cohort Study in the Veterans Health Administration." *Journal of Affective Disorders*. 2021;282:332-340.