



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Chronic TBI Outcomes and Treatment Strategies

A Precision Medicine Approach to Chronic mTBI Leads to Improved Post-treatment Outcomes

The heterogeneity of TBI sequelae suggests that uniform therapies for subjects with chronic symptoms may not be broadly effective. In the absence of FDA-approved drug treatments, standardized clinical practice guidelines that can be implemented across a wide range of TBI symptoms are needed to treat chronic TBI. Researchers at the University of Pittsburgh (Pittsburgh, PA) developed a clinical trial protocol called “Targeted Evaluation, Action, and Monitoring of Traumatic Brain Injury (TEAM-TBI).” TEAM-TBI is a multi-modal approach of efficacious targeted therapies and technologies which can provide large-scale and cost-effective treatment for TBI. Subjects enrolled in the trial complete a comprehensive intake evaluation, including neuroimaging and biomarker assessments, to assess the clinical trajectories of TBI patients as well as the heterogeneity of the injury. Patients are stratified into clinical TBI trajectories, which include psychological health, sleep disruption, cognitive impairment, oculomotor disturbance, vestibular impairment, and post-traumatic headache (Figures 1 and 2). A multi-disciplinary clinical team establishes individualized treatment regimens tailored to address an individual’s collection of TBI-related sequelae in a fully integrated manner. Participants receive a suite of interventions, including in-home therapies (physical and telemedicine) corresponding to a six-month targeted treatment. Interventions include activity and sleep monitoring, personal coaching, and mindfulness and cognitive training.

A six-month follow-up assessment is then conducted to compare the effectiveness of the individualized treatment regimen. Data published on early study completers show that patients demonstrated significant improvement from pre- to post-intervention on total symptoms, verbal memory, balance, vestibular/ocular, and cognitive outcomes (Figure 3). Early study results suggest that subjects with chronic symptoms that were unresponsive to therapy may benefit from targeted and individualized interventions.

The TEAM-TBI approach could provide a personalized medicine approach to TBI by guiding targeted therapies for improving cognitive function and decreasing symptoms.

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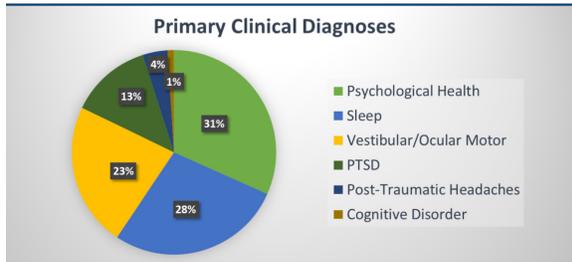


FIGURE 1: Breakdown of primary clinical diagnoses (n=88) that resulted from a multi-disciplinary adjudication process. A Psychological Health issue (*i.e.*, mood, anxiety), in isolation of PTSD, was the most common primary diagnosis. (Figure used with permission from the authors).

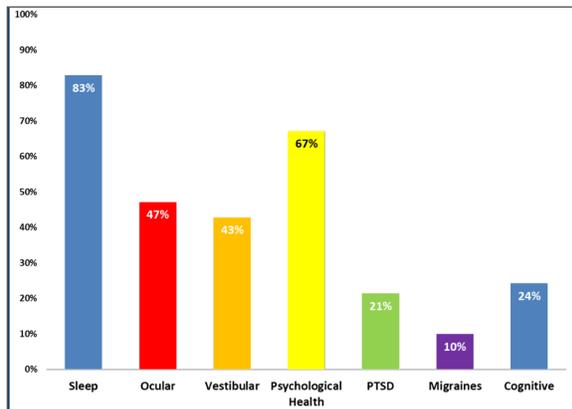


FIGURE 2: Percentage of TEAM-TBI participants with clinical diagnoses in each of the 7 domains (n=88). Each participant was adjudicated to have up to 5 diagnoses. Sleep was the most frequent finding amongst all participants. (Figure used with permission from the authors).

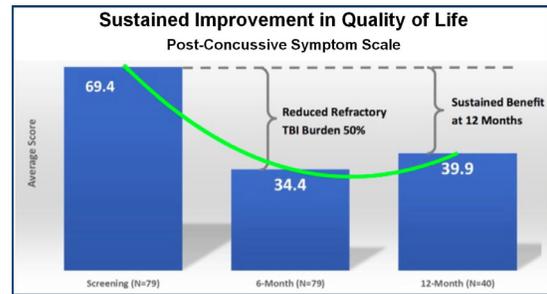


FIGURE 3: Symptom burden was calculated by self-report using the Post-Concussive Symptom Scale at screening (before enrollment; n=79), at the conclusion of the intervention (6 months after enrollment; n=79), and again 6 months after study completion (12 months from enrollment n=40). Symptom burden decreased on average by 50 percent after the treatment phase. This reduction in symptoms was sustained 6 months beyond study completion, indicating a durable improvement in QOL. (Figure used with permission from the authors).

