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**Best Practices for Supporting Individuals with Substance Use Disorders and Acquired Brain Injury
New York State Office of Addiction Services and Supports (OASAS) Medical Advisory Panel (MAP)**

In the United States, acquired brain injury (ABI), defined as injury to the brain that is not hereditary, congenital, degenerative, or induced by birth trauma¹, is a major public health issue and a leading cause of death and disability. The two types of ABI are traumatic brain injury (TBI) and non-traumatic brain injury (NTBI). TBI has an external cause such as a bump, blow or jolt to the head, or a penetrating injury such as a gunshot, and most commonly occurs in children, adolescents and older adults.² There are three main types of TBI: mild TBI or concussion, moderate TBI, or severe TBI. NTBI, on the other hand, occurs because of an internal process such as stroke, tumor, or infection, or from hypoxia or anoxia from cardiac arrest or carbon monoxide poisoning, or an overdose or multiple overdoses due to drugs or alcohol.

According to the CDC, there were approximately 2.5 million emergency department visits and 288,000 hospitalizations related to TBI in 2014.³ Numbers such as these are thought to be an underestimate of the true incidence and prevalence of TBI, including mild TBI. A statewide population study of individuals in Colorado who participated in a population-based, random digit-dialed telephone survey found that out of those reporting a positive lifetime history of at least one TBI, 17% did not seek or receive medical attention.⁴ Globally, those seeking medical attention for mild TBI each year are estimated to be 100 to 300 per 100,000 but the incidence is likely closer to or exceeding 600 per 100,000 annually because individuals do not always seek medical assistance.⁵ Although individuals can recover from acute TBI symptoms, some may experience the onset of disabilities that pose barriers to functioning at home, work and in the community after sustaining mild, moderate, or severe injuries.^{6,7}

Research has shown that individuals living with TBI are more likely to have a pre-injury history of problematic substance use and are more vulnerable to developing new onset substance misuse post-injury.⁸ One contributing factor may be medications prescribed to treat TBI-related headaches or orthopedic injuries sustained along with the TBI. In a study of individuals who received inpatient rehabilitation services, for example, 70-80% of individuals were discharged with a prescription for opioids.⁹ Additionally, the TBI Model System Study, a longitudinal study following individuals with TBI discharged from rehabilitation, found that those with a history of TBI were eleven times more likely to die from an unintentional poisoning than non-brain-injured populations, and that most deaths involved opioids and psychostimulants.¹⁰ The risk of problematic substance use and overdose is heightened by the memory, organizational and impulse control issues that are common after TBI and TBI rates are higher among individuals who are already at risk for substance use disorders: those who are homeless, incarcerated, victims of intimate partner violence, active members of the armed forces, and veterans. Additionally, hospitalization for a TBI at age six or younger was identified as a risk factor for the development of a substance use disorder by the age of 25 in several longitudinal studies.^{11,12} Childhood TBI has also been shown to be highly associated with the likelihood of arrest.

Damage to the frontal and temporal lobe areas responsible for executive functioning as well as to the hippocampus from ABI can result in impairments that have consequences for individuals seeking to engage in and benefit from substance use disorder treatment. Brain injuries that occur in childhood can have long term consequences that are not appreciated at the time of injury because damaged frontal and temporal lobe areas are not needed to navigate more complex situations until adolescence. The resulting disruptions in mastering expected developmental milestones in academics, relationships, and employment in adolescence and young adulthood, in turn, may be attributed to behavioral health conditions rather than the effects of a brain injury and the treatments prescribed may not address the actual underlying condition, a history of ABI.

Taken together, these findings highlight the importance of adopting a brain injury informed approach to individuals seeking substance use disorder treatment. The recognition that difficulty engaging in substance use disorder treatment may be rooted in an individual's history of ABI is an important first step in understanding how to provide person-centered treatment. Examples of behaviors exhibited in substance use disorder treatment by individuals with a history of ABI and their causes include:

- Demonstrating little or no recall of group or individual therapy topics and/or missing appointments due to memory problems associated with retaining new information;
- Appearing to lack motivation or interest in treatment that is due to difficulty with attention or concentration;
- Becoming easily frustrated, irritated, or angry because of language issues in both decoding and comprehending what is being heard or read and, for some, organizing thoughts, ideas and opinions and sharing them verbally or in writing;
- Giving lengthy, off-topic answers to questions, interrupting others, and generally lacking awareness of verbal and non-verbal cues due to inability to appreciate how cognitive limitations impact daily life, and how to anticipate and compensate for these limitations in their activities and relationships.

To enhance engagement with and benefit from substance use disorder treatment services, the OASAS MAP issues the following recommendations to treatment providers who may encounter individuals with a history of ABI:

- Become brain injury informed by offering education, training, and resources to all clinical staff on approaches to and supports for individuals living with a history of ABI.
- Screen all participants who enter substance use disorder treatment for a history of ABI using evidence-based screening instruments.¹³
- Consider and mitigate the “cognitive load” that some psychosocial interventions require by examining what treatment approaches expect in terms of learning of new facts, rules, and routines.¹⁴
- Consider environmental cues and individualized accommodations and strategies such as for those identified as or suspected of having a history of ABI such as:
 - Graphic organizers to structure group discussions^{15,16}
 - Smaller group review sessions of larger group messages
- Expanded use of Medication for Addiction Treatment (MAT) because the barriers that reduce treatment access in the general population are likely further compounded by injury-related factors among those with TBI.¹⁷
- Consider a referral to, or consultation with, a rehabilitation professional who addresses cognitive and functional skills, such as an occupational therapist or a speech therapist who specializes in cognitive-linguistic challenges.¹⁸

References:

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Additional Articles and Papers of Interest about Substance Use Disorders and Acquired Brain Injury

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Resources:

- The Brain Injury Association of America (BIAA) links callers from around the country with local resources. [Brain Injury Association of America | BIAA \(biausa.org\)](https://www.biausa.org/)
- Brain Injury Association of New York State (BIANYS) provides local and statewide resources for individuals living with brain injury, their families, and professionals. <https://bianys.org/>
- The Brain Injury Research Center of Mount Sinai (BIRC-MS) offers comprehensive screening and assessment tools, treatment manuals, and instructional videos for patients, providers, and peer mentors, that address the
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needs and challenges of specific TBI patient populations. icahn.mssm.edu/research/programs/new-york-traumatic-brain-injury-model-system

- BrainLine is a website funded through the Defense and Veterans Brain Injury Center that a variety of information and resources about life after brain injury to civilians, returning service members, their families, and professionals. brainline.org
- The Center on Brain Injury Research and Training (CBIRT) provides free webinars about TBI, including TBI and substance use disorders. <https://cbirt.org/tbi-team/recorded-webinars>
- The Maryland TBI Partnership Grant, Maryland Behavioral Health Administration, Maryland Department of Health. Grant # 90TBSG0027-01-00 from the U.S. Administration for Community Living, Department of Health and Human Services, Washington, DC 2021 <https://bha.health.maryland.gov/Pages/Traumatic-Brain-Injury.aspx>
- National Association of State Head Injury Administrators (NASHIA) is an organization that was established by State government employees to help one another plan, implement, and administer public programs and services for individuals with brain injury and their families. They also offer professional development resources including free webinars. <https://www.nashia.org/professional-development>
- New York State Education Department, Adult Career & Continuing Education Services, ACCESS-Vocational Rehabilitation, <http://www.acces.nysed.gov/vr/acquired-brain-injury>
- The Ohio State University, Wexler Medical Center/TBI Model System, an introduction to and tips for administering the Ohio State University TBI Identifier Method. <https://wexnermedical.osu.edu/neurological-institute/departments-and-centers/research-centers/ohio-valley-center-for-brain-injury-prevention-and-rehabilitation/osu-tbi-id>
- The TBI Model Systems Knowledge Translation Center is the repository of fact sheets on a variety of brain injury related topics as well as information regarding the research findings of the TBI Model Systems Programs around the country. msktc.org/tbi
- *Understanding Brain Injury: A Guide for Families*. Mayo Foundation for Medical Education and Research (MFMER), 2008. biaia.org/wp-content/uploads/2018/01/Mayo-Clinics-Understanding-Brain-Injury-A-Guide-for-the-Family.pdf

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