



The Intersection of Behavioral Health, Brain Injury and Suicide

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Session Objectives

- How can the Daily Living Skills (DLA)-20 assessment inform functional supports and service for individuals living with brain injury and/or behavioral health conditions
- Looking for clues of suicide risk utilizing the DLA-20
- Understanding post brain injury behavioral health conditions and the elevated risk of suicide among those living with a history of brain injury
- Being brain injury informed-tips for screening and assessment
- Incorporating supports and strategies for individuals living with functional challenges related to behavioral health, including a history of brain injury

TBI vs. ABI

TBI Defined

Traumatic Brain Injury (TBI) is an insult to the brain caused by an external physical force, such as a fall, motor vehicle accident, assault, sports-related incident, or improvised explosive device (IED) exposure

Both mechanisms of injury can result in a chronic

ABI Defined

Acquired Brain Injury (ABI) is an insult to the brain that has occurred after birth, such as TBI, stroke, near suffocation, infections in the brain, or anoxia or hypoxia secondary to; cardiac events, near drowning **and opioid overdose(s)**

disability that may get worse with age.

Brain Injury Severity

Distribution of severity:

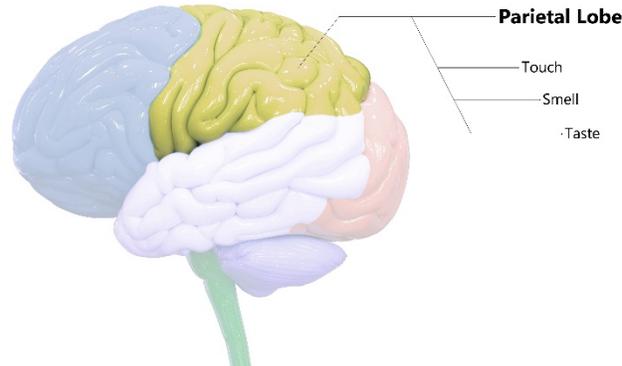
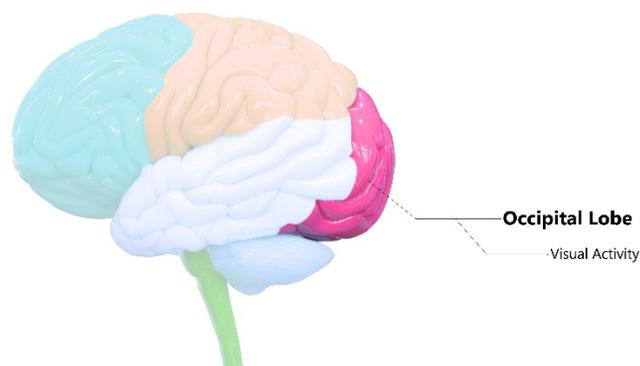
- **Mild injuries = 80 percent**
(Loss of consciousness (LOC) < 30 minutes, post traumatic amnesia (PTA) < 1 hour)
- Moderate = 10–13 percent
(LOC 30 minutes to 24 hours, PTA 1 to 24 hours)
- Severe = 7–10 percent
(LOC >24 hours, PTA >24 hours)

TBI “Fingerprints”

Our frontal lobe and the temporal lobes are key to managing behavior and emotions.

Thus, damage to these regions can contribute to mental health and/or addiction problems. Damage to these lobes is considered the **“Fingerprint of Traumatic Brain Injury.”**

There are two other lobes in the brain, the occipital and the parietal lobes.



Updating the Brain Injury Fingerprint: ABI Secondary to Overdose

What is known and observed regarding the impact of opioid overdose and the brain:

- Sudden loss of oxygen to the brain has the greatest effect on parts of the brain that are high oxygen users such as the hippocampus, basal ganglia and frontal region among others
- These areas of the brain are oxygen “hogs” and are critical to memory, learning and attending to new information, problem solving and the ability to manage our emotions and impulses — in other words, they are responsible for our adult thinking skills aka “executive functioning”
- Individuals who experience multiple overdoses from opioids may experience symptoms similar to those who experience multiple concussions

The ability to self-regulate is notably impacted by both Traumatic and Acquired Brain Injury when these critical areas are damaged, the functional manifestations can include:

Lability, impulsivity, irritability, and apathy



Daily Living Activities-20 (DLA) Functional Assessment Reminder: The Functioning is the Functioning

- Assess level of functioning/impairment compared to general population (not your caseload)
- Evaluate based on past 30 days (not history/future)
- If functioning varied in the last 30 days, rate lowest score of the more frequent pattern of behavioral responses to symptoms
- The DLA-20 score will not always correlate with consumer's self-report
- Consider functioning problems related to physical limitations & mental impairments
- DO NOT change scores due to environmental limitations or cultural nuances

DLA-20 through a brain injury informed lens: Health Practices

DLA-20: Health Practices

- How are people at taking care of illnesses and chronic conditions – appointments, treatment, meds?
- What are the Behavioral Health (BH) symptoms and how/when do they show up?
- Do absent or negative practices indicate concern for self or others? Imminent risks?

Brain Injury

- Mood-Behavioral Regulation Challenges secondary to either Traumatic or Acquired Brain Injury.
- Undiagnosed or unrecognized brain injury can lead to inappropriate behavioral health diagnosis and treatment

DLA-20 through a brain injury informed lens: Housing Stability, Maintenance

DLA-20 - Housing Stability

- Is the housing stable? Does it meet their needs?
- Living alone, with family/friend(s), or in a congregant setting, are they contributing as expected? Does the person find it difficult to cook, clean, find critical documents? Are bills paid on time or lost?
- Is there conflict with others in the residence?

Brain Injury

- Due to memory, problem solving, impulse control challenges it is difficult for some people with a history of brain injury to manage the responsibilities associated with housing independence without supports

DLA-20 through a brain injury informed lens: Communication

DLA-20: -ommunication

- Look at verbal and nonverbal
- Are people able to listen and communicate their needs?
- How much do they rely on assistance to get a full and complete story across?
- Is communication dysfunctional or antagonistic?

Brain Injury

Language and Speech problems are common after either a TBI or an acquired BI (stroke, opioid overdose(s)). Language issues include word finding (aphasia), difficulty comprehending and organizing written and spoken language. Speech problems include articulation and swallowing issues.

DLA-20 through a brain injury informed lens: Safety

DLA-20: Safety

- Are there recent instances of suicidal/homicidal ideation, intent, attempts?
- Assess situational awareness and making safe decisions
- If they are needed, are they able to safely use assistive technologies for vision/hearing
- Safe use of tools and appliances?

Brain Injury

- Safety concerns can arise from both physical challenges such as reduced balance and coordination as well as behavioral dysregulation secondary to injury to the frontal and temporal lobes.
- Incidences causing TBI/ABI may also impact vision or hearing

DLA-20 through a brain injury informed lens: Managing Time

DLA-20: Managing Time

- Is sleep sufficient for their needs in duration (7-9 hours/night for average adult) and is it restful?
- Timeliness of daily tasks – meds, meals...
- Are they showing up for work, appointments, and activities on time?
- Look at intentionality and implementation

Brain Injury

- Sleep disorders are common after brain injury as is being mindful of/tracking the passage of time
- If a person is experiencing both, adverse consequences can include; exacerbated mood disorders, irritability and the ability to meet expectations on the job

DLA-20 through a brain injury informed lens: Nutrition

DLA-20: Nutrition

- Independence/participation in shopping for, planning and preparation of at least 2 basically nutritious meals a day?
- If eating what is available, are they at least nutritious choices vs just sustain calories?

Brain Injury

- A history of brain injury can impact the ability plan purchases, get to a grocery store, have the budget to purchase adequate and nutritious food as well as plan and cook regular meals

DLA-20 through a brain injury informed lens: Problem-Solving

DLA-20 - Problem-solving

- Are they able to gather information from reliable sources?
- How often is decision-making informed and intentional vs impulsive or delegated?
- Are expectations set clearly and consistently

Brain Injury

- Frontal and temporal lobe damages can result in impaired executive skill functioning, impacted is the ability to assess a problem or situation and create a plan to address the problem of situation, execute the plan and THEN modify the plan as circumstances dictate

DLA-20 through a brain injury informed lens: Family Relationships

DLA-20 – Family relationships

- Quality of interactions with identified family – they get to identify family
- Look for relationships that are strained, dysfunctional, unreliable, superficial or destructive
- Dependency – unwanted or unnecessary?

Brain Injury

- Family members take on the role of caregiver, especially if the individual has physical disabilities. If the individual is living with behavioral health challenges, mental health and/or substance use disorders, the stress on families can lead to an erosion of relationships, this may be more so if substance use is factored into the

DLA-20 through a brain injury informed lens: Alcohol/Drug Use

DLA-20: Substance Use

- Knowing signs of and avoiding abuse
- Self-control with use
- Avoiding misusing and/or combining meds with alcohol and other drugs
- Includes legal and illegal substances

Brain Injury

- About half of all individuals with a history of brain injury had alcohol in their system at the time of injury. With childhood Traumatic Brain Injury's (TBI's), even if considered mild at the time, there is a high risk of Substance Use Disorder (SUD) by late adolescence or early adulthood
- 70-80% of individuals discharged from a rehabilitation setting with a moderate to severe brain injury will be prescribed a opioid. People with brain injuries often have difficulty engaging in recovery programs and treatment because of brain injury related cognitive difficulties such as memory, attention and comprehension issues

DLA-20 through a brain injury informed lens: leisure, community resources and social networks including sexual health

DLA-20: Leisure, Community Resources and Social Network

- Assess factors related to isolation/withdrawal
- Leisure activities – connection and coping skills
- Connections with friends, neighbors, peers and services
- Sexual health – both the physical and mental aspects of safe and appropriate behavior

Brain Injury

- The common constellation of challenges in the areas of physical, cognitive and behavioral health can interfere with an individual's ability, in general to access resources, leisure opportunities and make and/or maintain social connections with others including current or potential sexual partners

DLA-20 through a brain injury informed lens: Productivity

DLA-20: Productivity

- Having a primary role where one's efforts have tangible outcomes (products)
- Successes and/or challenges in working, volunteering, homemaking or in school
- Nature of supports and accommodations and whether they're effectively used

Brain Injury

- Unemployment and underemployment is very common after brain injury, up to 80% of individuals with a known history of brain injury are unemployed
- As learning new information and executive skill functioning are critical to academic success, without appropriate supports individuals with brain injury may have experience challenges returning to or entering educational settings

DLA-20 through a brain injury informed lens: Personal Hygiene, Grooming and Dress

DLA-20: Personal Hygiene, Grooming and Dress

- Are they regularly seeing to personal cleanliness including bathing and brushing teeth
- Assess tidiness of hair, hands and general appearance
- Look at clothing's cleanliness, fit and appropriateness to context

Brain Injury

- Challenges with physical and cognitive functioning may impact these areas. It is not uncommon for individuals to have fine and gross motor skill impairment post TBI
- Leading to difficulties with conducting personal care activities
- This is especially true if an individual's dominant side is affected

Ask the DLA-20 Supplemental Questions!

**Brief TBI Screen: Part of a
Comprehensive Person Centered
Assessment**

Ohio State University Traumatic Brain Injury Quick Screen (OSU TBI-ID)

OSU TBI-ID Quick Screen Questions:

1. Ever knocked out or lost consciousness? (*Yes, No, Not screened*)
2. Longest time knocked out? (*Less than 30 minutes, 30 minutes–24 hours, > 24 hours*)
3. Age (1–99) when first knocked out or lost consciousness? ____

Interpreting Findings

The OSU-TBI Short Screener is NOT a diagnostic tool. Instead, it provides a means to estimate the likelihood that consequences have resulted from one's lifetime exposure.

A person may be more likely to have ongoing problems if they have any of the following:

- WORST: one moderate or severe TBI
- FIRST: TBI with loss of consciousness before age 15
- OTHER SOURCES: any TBI combined with another way their brain function has been

impaired-has the person had a stroke, cardiac event, near drowning?

Depression, Anxiety and Brain Injury

- According to a 2017 review of affective disorders post TBI (Ponsford) around 60% of individuals will experience a psychiatric illness in the year following a brain injury, most common disorders being depression and anxiety
- “ Depression has a known major detrimental effect on health-related quality of life following Traumatic Brain Injury“(Bombardier et al., 2010)
- “...cognitive impairment adversely affects health-related quality of life following TBI, it is an independent predictor of social and emotional role functioning ... “

Sources: Semple BD, Zamani A, Rayner G, Shultz SR, Jones NC. Affective, neurocognitive and psychosocial disorders associated with traumatic brain injury and post-traumatic epilepsy. *Neurobiol Dis.* 2019;123:27-41. doi:10.1016/j.nbd.2018.07.018
Gorgoraptis N, Zaw-Linn J, Feeney C, et al. Cognitive impairment and health-related quality of life following traumatic brain injury. *NeuroRehabilitation.* 2019;44(3):321-331. doi:10.3233/NRE-182618.,
Ponsford &. Anxiety and Depression following TBI in: RM McMillian RW (Ed.), *Neurobehavioral Disability and Social Handicap Following Traumatic Brain Injury* pp.167.

The Correlation Between Brain Injury and Suicide: Summary of Selected Studies

Large Danish Population Study

- Nationwide registry-based retrospective cohort study
- Found the risk of suicide was higher following severe TBI than after mild (as measured by the length of hospitalization)
- Higher suicide rate among individuals whose first TBI occurred in young adulthood
- Risk of suicide higher after TBI than fractures
- Those with pre-injury psychiatric diagnosis or an engagement of deliberate self harm, a TBI was associated with a lower risk of suicide than among those who ONLY had a psychiatric diagnosis or engaged in self harm-this finding is thought to be due to perhaps increased oversight due to TBI related disability as well as TBI related reduced executive skills

Source: JAMA. 2018 Aug 14; 320(6): 580–588.

25 Published online 2018 Aug 14. doi: 10.1001/jama.2018.10211: 10.1001/jama.2018.10211

Traumatic Brain Injury mortality among U.S. Children and Adolescents 1999-2017

- TBI mortality from unintentional transportation crashes fell between 1999-2013 for children and adolescents (due to improved car and road engineering, better trauma care, child restraint device laws, graduated driver-licensing programs and the 2007-2009 recession)

Source: Journal of Safety
Research, Cheng et.al 2019

Traumatic Brain Injury mortality among US Children and Adolescents 1999-2017

- Since 2013, a gradual increase in pediatric TBI mortality
- TBI mortality rates were found to be higher among; boys, older children, and children in rural areas
- **This trend primarily driven by rise in suicide and homicide by firearm among those 10-19 years old, with 96% of suicide mortality related to firearms**

Brain Injury and Suicide

A study by Teasdale and Engberg completed in the 1990s followed 145,440 Danish patients who incurred either a (trauma induced) concussion, cranial fracture, or cerebral lesions for 15 years. Findings include:

- Increased rate of suicide for those who had a concussion only (one day in the hospital) and those with a cranial fracture with no identified cerebral lesion
- For these two groups, the increased rate, compared to the general population, was by a factor of two or more

Brain Injury and Suicide

(continued)

- Significant risk of suicide among those with cerebral contusions or traumatic intracranial hemorrhages
- A substantial **contribution to risk of suicide for study participants was substance misuse**
- Mortality rates for suicide are greater among patients who have traumatic brain injuries between the ages of 20-60 (suggests injuries incurred younger due to sports/play and not associated with alcohol use)

Source: *Teasdale and Engberg*

Brain Injury and Suicide

- A study of homeless veterans with and without a history of TBI found among these very vulnerable groups, those with a history of TBI met the criteria for more psychiatric diagnoses and more likely to be at risk for suicide (Brenner et. al. 2017)
- The TBI Model Systems National Database has over 7,000 people living with a moderate to severe Brain Injury, many who have been successfully followed for over 20 years. In this study of the Model Systems participants, researchers found “compared to the general population, people with TBI are at greater risk for depression and suicidal behavior many years after TBI.

Concussion and Suicide

The results of a 2016 Canadian study published in a *Washington Post* article by Erin Blakemore in February 2016 found the following:

- The long-term risk of suicide increases three-fold among adults who have had concussions
- Found suicide rate of 31 deaths per 100,000 —three times the population norm
- The meantime, between a mild concussion and suicide was 5.7 years with each additional concussion raising risk of suicide

Concussion and Suicide

- Among those who had a concussion and later completed suicide, 52 percent were men, 86 percent lived in an urban area, and their mean age was 41. Those who sustained their concussion on a Saturday or Sunday were four times more likely to complete suicide than the general public
- About half of the individuals who completed suicide saw a health care provider within the last week of their lives

TBI and Suicide Risk

What can precipitate suicidal thoughts in people living with TBI:

- Loneliness
- Lack of connection/support
- Bad news about prognosis
- Holidays
- Social anxiety
- Job/employment issues
- Lack of resources
- Frustration over tasks

Source: Adapted from Traumatic Brain Injury and Suicide, Information and resources for clinicians, VISN 19 Mental Illness, Research, Education, and Clinical Center, Denver VA Medical Center (from a Colorado survey of individuals living with brain injury)

TBI and Suicide Risk

Things that are helpful:

- Psychotherapy
- Medication
- Support Groups
- Having accessible providers
- Having a belief system/spirituality
- Distractions such as having something to do first, TV, computer, etc.
- Having a responsibility such as a pet or a job
- Family/friends that care

Source: Adapted from Traumatic Brain Injury and Suicide, Information and resources for clinicians, VISN 19 Mental Illness, Research, Education, and Clinical Center, Denver VA Medical Center (from a Colorado survey of individuals living with brain injury)

Be Brain Injury Informed

- Screen for a history of Brain Injury
- Look for signs and symptoms of brain injury
- Don't assume poor follow through and/or engagement in services is volitional
- Educate program participants about the risk of acquired brain injury secondary to opioid use as well as the increased risk of traumatic brain injury secondary to alcohol use related falls, fights and motor vehicle/pedestrian accidents
- Offer and model simple strategies (see handouts)
- “When you think you are done, you are not” individuals living with brain injury and co-occurring substance use related disorders benefit from long term follow up and supports
- Make appropriate referrals for specific brain injury related supports and services when indicated

Thank you

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