Slide 1
MARYLAND DEPARTMENT OF HEALTH
Making the Connection: Traumatic Brain Injury, Addiction and Acquired Brain Injury in Treatment and Community
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Maryland Rehabilitation Association/Division of Rehabilitation Services
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Slide 2
Venn Diagram:
- Brain Injuries 5.8 Million
- Substance Use - Related Disorder 16.4 Million
- Mental Health Concerns 7.7 Million
Intersection between Substance Use & Mental Health Concerns: Dual 2.6 Million
Source: Federal TBI Partnership Grant, Opioid Work Group 2019

Slide 3
From the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
- Researchers report: People with traumatic brain injury are at a significantly greater risk for opioid misuse and overuse.
- The aggregate consequences of the cognitive and behavioral impairments following moderate to severe traumatic brain injury typically results in difficulties with community re-entry, family adjustment and stability, and return-to-work resulting in mood disorder, for which they may self-medicate with a prescription for an opioid

Slide 4
SUD Prevalence In Relation to BI (2017)
TRAUMATIC BRAIN INJURY
- 5.3M people are disabled as a results of TBI
- Falls is the leading cause of death for old and young
- 153 Die every day of TBI
- 2.8M Sustained a TBI annually
- Chronic Pain, SUD, Mental Illness are common as results of TBI

OPIOIDS
- 11.4M People currently misuse prescription opioids
- 1.7M Diagnosed with an OUD - Prescription Pain Reliever Use 0.7M Diagnosed with an OUD – Heroin Use
- 130+ die every day from Opioid-Related Overdose
- Top 3 ways prescriptions are accessed – Friend, Family, Prescriber Accidental overdose leading cause death for under 50 years old
- Disability post-overdose survival

Alcohol Use Disorder
- Leading substance use
- 140.6M Current alcohol users
- 12.2M Alcohol use disorder only 2.3M Alcohol and Illicit Drug disorder

Illicit Drugs
- 4.1 Million – Marijuana use Dx
- 3.4 Million – Other illicit drugs use Dx

Mental Health
- 7.7M Mental health disorder only
- 2.6M Co-occurring SUD and MH disorder
- 3.2M made suicidal plans
- 1.4 had non-fatal suicide attempts

Source: Federal TBI Partnership Grant, Opioid Work Group 2019
Slide 5
Making the Connection
The Frontal Lobe
The **frontal lobe** is the area of the brain responsible for our “executive skills” or higher cognitive functions. These include:
- Problem solving
- Spontaneity
- Memory
- Language
- Motivation
- Judgment
- Impulse control
- Social and sexual behavior

Source: Adapted from Dr. Mary Pepping of the University of Idaho’s presentation “The Human Brain, Functions, and Injury”
Graphic: Brain with Frontal Lobe highlighted.

Slide 6
The Temporal Lobe
The **temporal lobe** plays a role in emotions and is also responsible for smelling, tasting, perception, memory, understanding music, aggressiveness, and sexual behavior.

The temporal lobe also contains the **language area** of the brain.

Graphic: Brain with Temporal Lobe highlighted.

Slide 7
TBI “Fingerprint”
- There are two other lobes in the brain, but the frontal lobe and the temporal lobe are critically involved in managing behavior and emotions.
- Thus, damage to these regions can result contributing to mental health and/or addiction problems. Damage to these lobes is considered the “Fingerprint of Traumatic Brain Injury.”

Graphic: Brain with Occipital Lobe highlighted.
Graphic: Brain with Parietal Region highlighted.

Slide 8
Intersections between Substance Use Disorders and Brain Injuries
- Federal TBI Program Opioid & Brain Injury Work Group
  - Substance Use Disorders puts people at risk of acquiring a traumatic brain injury
  - Opioid Overdoses puts people at risk of acquiring an anoxic/hypoxic brain injury
  - Mental Illness puts people at risk of acquiring a brain injury
  - Traumatic Brain injury puts people at risk of developing Mental illness
  - Traumatic Brain injury puts people at risk of developing a substance use disorder
  - Mental illness puts people at risk of developing an Opioid Use Disorder
  - TBI 3-8 x more like to have repeated injury
  - TBI 2-4 x more like to complete suicide than general population. Risk increases

Slide 9
Updating the Brain Injury “Fingerprint”-
Acquired Brain Injury 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.”

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

**Slide 10**

Universal Precautions

- Individuals living with undiagnosed or untreated history of Traumatic Brain Injury (TBI) are overrepresented among the homeless, the incarcerated and those involved with mental health and addiction services.
- Individuals who experience a TBI often have a prior history of problematic substance use and individuals without a history of substance abuse are at higher risk of developing addiction post-TBI.
- Individuals with a TBI with co-occurring mental health and addiction challenges find it difficult to engage with and remain in treatment for these conditions due to the thinking and behavioral barriers common to those with a TBI.

**Slide 11 – repeats Slide 10**

**Slide 12**

Universal Precautions

- Screen all individuals receiving Brain Injury services for a history of, or a current issue with, mental health and addiction.
- Assume there is a risk of continuing behavioral health issues post-injury.
- Assume there is a risk of developing behavioral health issues post-injury.

**Slide 13**

Observations

“They all have difficulty learning new information, and it’s pretty dense. Every day is pretty much a new day for them, and sometimes within a day they can’t maintain information they have learned. If their memory is really compromised, it’s going to be hard for them to learn a new life that doesn’t involve drugs.”

- Dr. Marc Haut, West Virginia University’s Department of Behavioral Medicine and Psychiatry


**Slide 14**

Observations

“One way to think about this would be that an overdose is like a concussion, where you have a TBI to the brain … if the person doesn’t die, the brain recovers, but they may be, like with a concussion, more susceptible to a future event. And then there also may be cumulative damage that occurs.”

- Dr. Alex Walley, Associated Professor of Medicine, Boston University School of Medicine

**Slide 15**

TBI: A Chronic Condition

A longitudinal study of the TBI Model Systems cohort (N=6,913) found those who received inpatient rehabilitation at a specialized brain injury center have a reduced life expectancy:

- People were 2.23 times more likely to die than those of comparable age, sex and race in the general population.
- Reduced life expectancy of nine years.
- People are at higher risk of dying from seizure (although this is relatively infrequent cause of death).
- External causes of death include a fall, accidental poisoning, homicide, motor vehicle accident and suicide.


**Slide 16**

TBI and Accidental Poisoning

20.7 percent of deaths post brain injury are related to accidental poisoning
- Opioid primary cause: 55 percent
  Alcohol primary cause: 23 percent
- Opioid involved: 64 percent
- Alcohol involved: 41 percent

John Corrigan, Ph.D., plenary presentation, National Association of State Head Injury Administrators State of the State conference, Des Moines Iowa, 9.25.18

Slide 17
Substance Abuse Treatment
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.

Source: Adapted from Ohio Brain Injury Program/John Corrigan PhD, 2017

Slide 18
Substance Abuse Treatment
These consequences are very familiar to those of us in the Brain Injury community:
- Those who have experienced an external blow or blows to the head with enough force are vulnerable to damage to the frontal lobe, hippocampus and other parts of the brain linked to adult thinking skills.

Slide 19
For Service Providers
- Screen everyone for a history of substance use at the time of intake and screen for history of a prior TBI/acquired Brain Injury (ABI).
- Do not automatically decline services for potential participants who you know are — or are suspected of — currently using substances.
- Add an addiction specialist position to the treatment team.

Slide 20
For Service Providers
- Develop a working relationship with a substance abuse community provider to whom your program can refer individuals whose substance abuse issues cannot be adequately addressed in-house.
- Provide on-going education regarding substance abuse to individuals using services — ideally via a combination of group and individual formats.
- Be prepared by developing consequences/contingency plans for participants whose use is interfering with participation in/benefiting from program services, and share these with everyone at the time of intake.

Slide 21
Using Screenings
- At intake to program services
- Individually as part of initial assessment
- As part of a group activity
- As part of ongoing individual counseling/therapy sessions
- To be repeated as part of discharge preparations
- SCREEN EVERYONE (if you ask, they will tell)

Slide 22
Screening Tools
- CAGE Questionnaire
- Brief Michigan Alcoholism Screening Test (BMAST)
- The Alcohol Use Disorders Identification Test (AUDIT)
- Ask about marijuana use and other illicit drugs, including opioids
- A variety of screening tools for substance use can be found at: https://www.drugabuse.gov/nidamed-medical-health-professionals/screening-tools-resources/chart-screening-tools

Slide 23
Integrating Support
DORS Staff & Community Providers: Never underestimate the value individuals you serve place on your opinions and advice.
- You don’t have to be an addictions counselor to speak from your knowledge and expertise regarding the impact of substances on the rehabilitation work you are doing with the patient

Slide 24
Integrating Support
- “As your speech therapist, I recommend you do not drink alcohol because it will make your articulation, memory and new learning abilities worse.”
- “I know you want to return to work, and as your employment specialist I want to optimize your chances of employment success. Part of that success is not allowing alcohol and/or other substances be a barrier to you; here is what employers expect…”

Slide 25
Martine Jean-Baptiste:
Maryland Overdose Response Program
Educational Training Program
CORE CURRICULUM

Slide 26
Integrating Resources
Suggest program participants attend — especially individuals who are in the Contemplation and beyond Stage of Change — the Alcohol Education Series:
- Sponsored by the Kolmac Clinic Addiction Education series, featuring Dick Prodey, MA, M.Ed, an addiction professional in long-term recovery.
- Runs every Wednesday evening from 7 to 9 p.m. at the Sheppard Pratt Conference Center in Towson. https://www.kolmac.com/our-patients/dick-prodey-lecture-series/

Slide 27
If in-person attendance is unrealistic, use the video versions of the lectures. All eight lectures (two hours each) are available at: http://keepsober.org/Prody.htm.
- Recommended staff facilitator watch the videos in advance, break into 15- or 30-minute chunks, depending on the group’s ability to attend and focus
- Create a graphic organizer based on the content of each chunk that asks individuals to jot down main points, etc.
- Use the remainder of the group to discuss

Slide 28
Host a Brain Injury-Informed and Accommodating 12-Step open meeting and consult with Brain Injury providers who are addressing this co-occurring issue via a systemic approach:
- Currently, two Brain Injury provider agencies are hosting approved 12-Step Open Meetings, which is open to supporters of individuals seeking/exploring recovery without being in the program themselves.
- Contact Martian Kerrigan mwkerri1@hotmail.com for information on how to establish a meeting.

Slide 29
Recommendations that employment professionals can share when collaborating with, or referring to, addiction specialists:
• Individuals seeking treatment and in recovery from opioid addiction should be screened for a history of a prior TBI.
• Addiction services professionals, individuals in treatment and recovery, as well as their families and supporters, should be aware of the possible thinking and memory problems that may result from exposure to opioids.

Slide 30
Integrating Resources
• Difficulty engaging in treatment should not automatically be interpreted as resistance; rather, lack of treatment engagement and compliance may be the direct result of opioid-involved brain damage and the individual may benefit from best practices currently recommended for individuals in recovery from Brain Injury with or without a history of substance use disorder (SUD).

Slide 31
Integrating Resources
**Systems and policy recommendations:** Expand Brain Injury services to accommodate the increase of those affected by Brain Injury, secondary to opioid overdose(s).
Message to all stakeholders: Addressing the major public health issues of Brain Injury and the opioid epidemic requires a compressive and broad multipronged approach that includes Naloxone training and availability, as well as prevention, education and rehabilitation strategies.

Slide 32
Accommodating Symptoms
Accommodating the symptoms of Brain Injury:
See handout: [http://ohiovalley.org/informationeducation/accommodatingtbi/accommodationspresentation/](http://ohiovalley.org/informationeducation/accommodatingtbi/accommodationspresentation/)

Slide 33
Resources
• Ohio Valley Center for Brain Injury Prevention and Rehabilitation: 614-293-3802
  www.ohiovalley.org provides information and resources regarding addiction, mental health and Brain Injury as well as a tutorial on how to use the Ohio State University TBI Identification screening tool.
• Brainline: www.brainline.org
  Funded through the Defense and Veterans Brain Injury Center, Brainline offers civilians and returning service members with Brain Injury, families and professionals a variety of information and resources regarding life after Brain Injury.

Slide 34
Maryland Resources
Find treatment in your community via the Maryland Certified Treatment Locator and the Substance Abuse and Mental Health Services Administration’s (SAMHSA) Treatment Locator:
• 211 Maryland: Call 211, press 1
• Learn about medication assisted treatment and how to access it [https://bha.health.maryland.gov/Pages/md-mats.aspx](https://bha.health.maryland.gov/Pages/md-mats.aspx)
• Baltimore Harm Reduction Coalition: [http://baltimoreharmreduction.org/](http://baltimoreharmreduction.org/)

Slide 35
Maryland Resources
The Brain Association of Maryland
[www.biamd.org](http://www.biamd.org)
410-448-2924

Slide 36
Maryland Resources
• Maryland Behavioral Health Administration’s Traumatic Brain Injury Information and Services: [https://bha.health.maryland.gov/Pages/Traumatic-Brain-Injury.aspx](https://bha.health.maryland.gov/Pages/Traumatic-Brain-Injury.aspx)
Slide 37
Thank you
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