Screening & Accommodating for a History of TBI, a Critical Component of Building a Person Centered Care Plan

Anastasia Edmonston MS CRC, MD Behavioral Health Administration

May 3, 2017
How many Americans sustain a TBI annually?

• 231,840
• 1.8 million
• 1.2 million
• Males 2:1 more than female
• Very young and very old due to falls
  • Adolescents and young adults due to intentional injuries and moving vehicle crashes
• Greatest behavioral risk factors:
  – violence prone or exposed to those who are
  – misuse substances or exposed to those who do
• More risk among lower socio-economic groups
Civilian Groups Who Have Multiple Mild TBIs

• Athletes, particularly boxers, football players & hockey players
• Victims of intimate partner violence and childhood physical abuse
• People who misuse and abuse substances
• People who are homeless
• Individuals with mental health issues

Courtesy of John Corrigan Ph.D
Ohio Valley Center 2014
True or False…..

• If a person accurately states their name and the date after a blow to the head, it is safe to assume they will be fine.

• TBI is a chronic health condition

• The impact of childhood TBI may not become apparent until years later
The Scope of the Problem

Distribution of Severity:

- Mild injuries = 80%
  (Loss of Consciousness < 30 min, Post Traumatic Amnesia < 1 hour)

- Moderate = 10 - 13%
  (LOC 30 min-24 hours, PTA 1-24 hours)

- Severe = 7 - 10%
  (LOC >24 hours, PTA >24 hours)
Continuum of TBI Severity

- **Least severe**: Dazed, confused, gap in memory
- **Mild TBI (concussion)**
- **Moderate TBI**
- **Severe TBI**

- **Any LOC**
- **LOC ≥ 30 minutes**
- **LOC > 24 hours**

Courtesy of John Corrigan Ph.D
Ohio Valley Center 2014
<table>
<thead>
<tr>
<th>TBI-Defined</th>
<th>ABI-Defined</th>
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<tbody>
<tr>
<td><strong>Traumatic Brain Injury</strong> is an insult to the brain caused by an external physical force, for example; fall, MVA, assault, sport-related, IED exposure</td>
<td><strong>Acquired Brain Injury</strong> is an insult to the brain that has occurred after birth, for example; TBI, stroke, near suffocation, infections in the brain, anoxia</td>
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Both Mechanisms of Injury can result in chronic disability that may get worse with age.*
Diffuse Axon Injury is a very serious injury, as it directly impacts the major pathways of the brain. Common with sports, intimate partner violence, IED exposure, shaken baby, MVAs.
The Frontal Lobe

The frontal lobe is the area of the brain responsible for our “executive skills” - higher cognitive functions.

These include:

- Problem solving
- Spontaneity
- Memory
- Language
- Motivation
- Judgment
- Impulse control
- Social and sexual behavior.

Not to diminish injury to the Parietal or Occipital Lobes, but damage to these areas tend not have the strong behavioral health impact seen in Frontal and Temporal Lobe damage.
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.
The “Fingerprint” of TBI

Frontal areas of the brain, including the frontal lobes, are the most likely to be injured as a result of TBI, regardless the point of impact to the head.
The brain is set into motion along multiple axial planes.

Courtesy of John Corrigan Ph.D.
Interior Skull Surface

Bony ridges

Injury from contact with skull

Pathophysiology
### Possible Physical Changes

<table>
<thead>
<tr>
<th>Injury related problem</th>
<th>How it may affect a person functionally….</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td>Unsteady gait, poor eye-hand coordination, slow or slurred speech, tremors, paralysis</td>
</tr>
<tr>
<td>Visual Deficits</td>
<td>Staring or poor eye contact, blurred or double vision, inability to follow an object with their eyes, visual field neglect</td>
</tr>
<tr>
<td>Additional Physical Challenges:</td>
<td>Seizures, deaf or hard of hearing, fatigue</td>
</tr>
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</table>
**Possible Changes in Thinking, aka Cognitive Skills**

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<thead>
<tr>
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<tr>
<td>Memory</td>
<td>Trouble following directions, providing requested information, making appointments</td>
</tr>
<tr>
<td>Processing (receptive)</td>
<td>Understanding what being said, reading</td>
</tr>
<tr>
<td>Processing (expressive)</td>
<td>Trouble putting thoughts into words, tip of the tongue syndrome</td>
</tr>
<tr>
<td>Problem solving (related to frontal lobe &amp; temporal tip Injury)</td>
<td>Impulsive, easily frustrated, sexually disinhibited, verbally/physically combative, interpersonally inflexible, poorly organized</td>
</tr>
<tr>
<td>Attention</td>
<td>Decreased ability to focus and sustain attention, difficulty splitting and dividing attention, can compromise memory for new information</td>
</tr>
</tbody>
</table>
# Possible Changes in Personality & Behavior *

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</tr>
</thead>
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<td>Depression</td>
<td>Flat affect, lack of initiation, sadness, irritability</td>
</tr>
<tr>
<td>Unawareness</td>
<td>Unable to take social cues from others</td>
</tr>
<tr>
<td>Confabulation</td>
<td>“making up stories”</td>
</tr>
<tr>
<td>Perservation</td>
<td>Gets “stuck” on a topic of conversation or physical action</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Can exacerbate other cognitive/behavioral problems</td>
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“Growing into Brain Injury”
“Growing” into Brain Injury, without proper supports can lead to mental health and addiction issues that bring people living with hidden TBI into the Public Behavioral Health System

• When the injury occurs early in life when there are structures and supports in place
• Appropriately, structure offered by school, parents and community fall away as children go through adolescence into adulthood, a TBI incurred at age 7, may not be fully “unmasked” functionally/behaviorally till age 11/12/13 with the challenges of middle school/puberty
• The frontal lobe and temporal tips injured earlier, are unable to adequately respond to the expectations of behavioral regulation and executive skill functioning
Natural History of TBI to Age 25
(McKinlay et al., 2008)

1,265 children born in 1977 in Christchurch, New Zealand and followed to age 25

Annual assessments from 4 months to age 16, then at 18, 21 and 25

Verified through medical records all TBIs diagnosed by a professional (MD office, ED, hospitalized)

79.3% successfully followed through age 25

Courtesy of John Corrigan Ph.D.
Early Injury as Predictor of Later Problems

- Compared to no TBI and outpatient only, by early adolescence (10-13 y.o.) those hospitalized with a mild TBI before age 6 were:
  - More hyperactive and inattentive as rated by parent and teacher
  - More likely dx’d with ADHD, conduct disorder or oppositional defiant behavior
  - More likely to have substance abuse problems
  - More likely to demonstrate mood disorders
Early Injury as Predictor of Later Problems (continued)

By late adolescence and early adulthood (16-25 years old):

- Those hospitalized with 1st TBI before age 6, 3 times more likely to have a diagnosis of either alcohol or drug dependence by age 25
- Those hospitalized with 1st TBI 16-21, 3 times more likely to be diagnosed with drug dependence
- TBI highly associated with likelihood of arrest
Association between TBI and Arrests

Courtesy of John Corrigan Ph.D.

Mean Number of Arrests

<table>
<thead>
<tr>
<th>Reference</th>
<th>Outpatient</th>
<th>Inpatient</th>
</tr>
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<tbody>
<tr>
<td>1st TBI 0-5</td>
<td>1.63*</td>
<td>1.65*</td>
</tr>
<tr>
<td>1st TBI 6-15</td>
<td>3.52**</td>
<td>5.46**</td>
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Relative Risk Ratios

* p<0.05
** p<0.01

Developmental
Ohio Valley Center for Brain Injury Prevention and Rehabilitation

"What if There's a Traumatic Brain Injury?" Webinar

This webinar is intended for behavioral health professionals who want to learn about traumatic brain injury (TBI). It is important to know a client’s lifetime history of TBI, how neurological impairments could interfere with treatment and suggestions for adapting their approach to accommodate those impairments. John D. Corigan, PhD, Professor in the Department of Physical Medicine & Rehabilitation at Ohio State University and Editor-in-Chief of the Journal of Head Trauma Rehabilitation presented this 1-hour training.

CEUs available

View webinar

The live webinar was presented on Wednesday, February 26, 2014. Please select the appropriate recorded version option for your needs:

- To view the recorded webinar using Firefox, Safari, or Internet Explorer, click here.
- To view the recorded webinar using Google Chrome, click here.
- If you wish to receive APA CE credits, please visit Give an Hour to watch the video and complete their evaluation.

About CEUs
Population-based study of TBI among adults in Colorado

- Random digit dialed 2,700 Colorado adults administered computer assisted telephone interview based on OSU TBI-ID
- 200 called back no sooner than 6 months later to verify reliability

42% recalled at least 1 TBI in their lifetime
24% at least 1 TBI with loss of consciousness
6% at least 1 moderate or severe TBI

Courtesy of John Corrigan Ph.D
Compared to adults without head injuries those with at least 1 TBI with LOC were:

- 1.5 times more likely to experience mental health problems
- 1.7 times more likely to be misusing alcohol
- greater than 2 times more likely to have any limitation due to physical, mental or emotional problems;
- greater than 3 times more likely to have a disability.
TBI and Psychiatric Disorders

- Depression frequent following TBI; depressed clients with TBI more likely suicidal.
- Higher rates of anxiety disorders (generalized, OCD and PTSD)
- Higher rates of psychosis among persons with TBI
- Some studies have found higher rates of personality disorders among persons with TBI.
- Childhood TBI doubles likelihood of psychiatric disorder by early adulthood.

Courtesy of John Corrigan Ph.D.
Prevalence of Traumatic Brain Injury in an Offender Population: A Meta-Analysis

Eric J. Shiroma, MS¹,²; Pamela L. Ferguson, PhD¹; E. Elisabeth Pickelsimer, DA¹

<table>
<thead>
<tr>
<th></th>
<th>Any TBI</th>
<th>TBI with LOC</th>
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<tbody>
<tr>
<td>All screening methods</td>
<td>60.3%</td>
<td>50.2%</td>
</tr>
<tr>
<td>In-depth interview</td>
<td>66.9%</td>
<td>52.3%</td>
</tr>
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Based on 20 studies published between 1983-2009
Estimates are weighted for gender & offender type.
HBO’s “Real Sports” interviews Dr. Ann McKee of BU~10.21.14 on the DV/CTE link

“…many former players who have no history of domestic violence apparently become dangerous to their families as they suffer from chronic traumatic encephalopathy…” NY Daily News

“These guys used to be fine. They were entirely reasonable at all times of the day. But now these guys are assaultive, they’re overreacting. They’re paranoid, they’re jealous” Ann McKee MD
The recent movie “Concussion” starring Will Smith as pathologist Bennet Omalu depicted several former players affected by CTE:

- Mike Webster
- Justin Strzelczyk
- Andre Waters
- Dave Duerson
“Alcohol abuse/dependence is the second most common Axis I disorder in persons with TBI”
Lowing et al. Journal of Neurotrauma 2014
Brain Injury and Alcohol… analysis of research studies on the relationship between alcohol and brain injury found:

- Between 37-51% of individuals hospitalized for TBI were intoxicated at the time of injury & have a history of alcohol misuse
- Individuals with a history of pre-injury alcohol use have a more complicated course of recovery and generally poor rehabilitation and social outcomes

(Parry-Jones et.al 2006)
“Studies of both brain structure and function indicate that substance misuse and TBI interact in an additive way, specifically, their co-occurrence results in more impairment than either one alone.”

“Substance misuse also limits outcomes from TBI by undermining environmental supports such as familial care or access to services.”

Data from a Finnish birth cohort study have “reported multiple risk factors associated with incurring a TBI, including that if parents misused alcohol, there was a two-fold greater chance of childhood TBI”. (possible reasons why??)

“When all factors are considered, it would appear reasonable to expect half of the adults under age 65 receiving inpatient rehabilitation for a primary diagnosis of TBI to have prior histories of either alcohol misuse or illicit drug use.”

Long term consequences; “Those who also misuse substances face additional complications, including they are less likely to be working, have lower subjective well-being, have an increased likelihood of suicide and an increased likelihood of premature mortality due to any cause and are at greater risk for seizure.”
Substance Abuse Treatment Clients Who Have Had a TBI with Loss of Consciousness

Courtesy of John Corrigan Ph.D.
Substance Abuse Treatment Clients with TBI

(Corrigan & Mysiw, 2012)

- first used at a younger age
- have more severe SUD (worse use and more prior treatments)
- have more co-occurring mental health problems
- have poorer prognosis for successful treatment outcome (more so earlier the age at first TBI?)
Messages to Share
Drinking After Brain Injury—Useful for Individuals who are in the Precontemplation or Contemplation Stage of Change
Ohio Valley Center

- People who use alcohol or drugs after TBI don’t recover as fast as those who don’t.
- Any injury related problems in balance, walking or talking can be made worse by using drugs or alcohol.
- People who have had a brain injury often say or do things without thinking first, a problem made worse by using alcohol or drugs.
- Brain injuries cause problems with thinking, like concentration or memory, and alcohol makes these worse.
- After a brain injury, alcohol and other drugs have a more powerful effect.
- People who have had a brain injury are more likely to have times when they feel sad or depressed and drinking or doing drugs can make these problems worse.
- After a brain injury, drinking alcohol or taking drugs can increase the risk of seizure.
- People who drink alcohol or use other drugs after a brain injury are more likely to have another brain injury.
Problematic exposure to TBI implies:

Courtesy of John Corrigan Ph.D.

Person may have difficulty accessing services, or remaining engaged in services, due to barriers created by cognitive and/or behavioral weaknesses.
1. Look for neurologically based cognitive and behavioral barriers to treatment.

2. Adapt service provision to accommodate weaknesses.

3. Assist with the development of compensatory strategies.

4. Be cautious when making inferences about motivation based on observed behaviors.
3 items capture information about any history of traumatic brain injury (TBI):

– Whether consumer was ever knocked out or lost consciousness
– Longest period of time consumer was knocked out
– Age at which consumer was first knocked out
Traumatic Brain Injury Identification Method

A Tool for Health Care and Social Service Professionals

Wexner Medical Center

Ohio Valley Center for Brain Injury Prevention and Rehabilitation
Department of Physical Medicine and Rehabilitation
The Ohio State University

brainline.org Presentation produced in partnership with BrainLine, a project of WETA
A Logic Model for Building a Plan-
Accommodating a History of Brain Injury

Outcomes
   Services
   Objectives-supported by interventions
   Strengths/Barriers- HOLISTIC
   Goals-OF the Individual
   Prioritization- VIEWED THROUGH TBI Related Awareness/Needs
   Understanding-HOW HX informs behavior
   Assessment-SCREEN for HX of TBI

Request for services

Adapted from Grieder & Adams 2005
Anosognosia - lack of awareness of injury or illness (as in schizophrenia) imposed barriers
ONCE YOU KNOW THERE IS A TBI, WHAT DO YOU DO ABOUT IT?
Accommodating the Symptoms OF Brain Injury

http://ohiovalley.org/informationeducation/accommodatingtbi/accommodationspresentation/
PAGE 10- Reflective Recommendations

“What helps you with...?"

- Learning new material
- Remembering assignments
- Staying on Track
- Figuring out how to do new things
- Making choices that keep you healthy and safe
To Enhance Memory

- Structure the environment
- Repetition of information, to promote procedural memory
What can be done

- Write information down
- Review, Rehearse, Repeat
- Use of compensatory strategies such as; use of a calendar, alarms, smart devices, create a daily schedule, "To do" lists and shopping lists, Labeling items
Strategies

- Use of a journal/calendar
- Create a daily schedule
- Learning to break tasks into small manageable steps
- Use of a digital recorder/smart phone app
- Encourage use of rest and low activity periods, naps are to be encouraged!
- Work on accepting coaching from others
- Work on generalizing strategies to new situations
- Use of a high lighter (RED)
- Alarms (on phone, watch, PDA) to move through the day
Strategies cont…..

- Use of a template for routine tasks, on the job, at home, in the community
- Use of ear plugs to increase attention, screen out distractions (Parente & Herman 1996)
- Partitions/cubicles, at work, quiet space at home
- Model tasks e.g. turning on a computer and accessing email etc.
Strategies cont.....

• Use of pictures, for faces/names, basic information, for step-by-step procedures, e.g. making coffee

• Use of a timer, to track breaks at work, the time minimum technique, allocated time to puzzle over a problem or vent a frustration

• Audio books, movies, keep the subtitles (for processing content in the case of memory and comprehension problems and increase awareness of nonverbal cues/communication)
By Structuring the Environment, memory, organization and attention are supported, enhancing independence, reducing frustration, and freeing up cognitive and psychological energy to tackle new challenges at home, work and community.
Integrating Support for TBI related Behavioral Health Disorders into a Person Centered Care Plan

John is a 35 year old single man who has been diagnosed with major depression, characterized by low mood punctuated by outbursts that seem to come out of the blue. Based on the answers to the DLA-20 supplemental questions regarding TBI, his behavioral health provider conducted the OSU TBI ID in its’ entirety, discovering that John had incurred several TBIs in his youth, one from a fall at 6 years old that resulted in a skull fracture and several nights in the hospital, a second fall from a bike at age 12 and a third, also resulting in hospitalization, from injuries received in a fight when he was 28 years old. Both the 1st and 3rd TBIs resulted in periods of unconsciousness.
EXAMPLE: Through a TBI informed lens

GOAL: “I Want to Keep my Job!!”
(Disinhibition and lability are common after TBI with Frontal & Temporal Lobe involvement)

From the Assessment and Narrative Summary, John and his team suspect his anger may be due at least some of the time from his difficulty in understanding or remembering what is being asked of or expected from him in new situations (such as working with a new supervisor on the job).

OBJECTIVE: “John will yell and/or throw things less than 3 times per day.”

Interventions:

1. John and his case manager Samantha will make an appointment for a consultation with a neuropsychiatrist within 2 weeks.
2. John will ask for clarification/paraphrase back instructions (“want you want me to do is...”) when given new instructions or when he does not understand/remember procedures on the worksite 2x per shift as observed by Marc, his job coach & himself.
3. John will work with Marc to create a template of frequently job tasks he will keep in his phone for easy reference within 2 weeks.
4. John and his psychotherapist will identify at least one meditation or mindfulness strategy (e.g. the apps “Breath2Relax” or “Tactical Breather”) and learn how to use it to deescalate his anger within 2 weeks.
• By taking into account the effects of a TBI, service providers will better understand their clients.

• Increased understanding can help to build therapeutic rapport.

• Adapting services does not need to be expensive, and can improve overall effectiveness.

• Some adaptations may also be applicable to persons with other disabilities.
The Brain Association of Maryland

RESOURCES & SUPPORTS

www.biamd.org
Maryland Access Point (MAP)

A statewide resource for information and assistance

1-844-627-5465
http://www.marylandaccesspoint.info/
Brain Injury Waiver Program

Offered through the Department of Health and Mental Hygiene (DHMH)

- **General Information:**
  
  **What:** Funding for ongoing rehabilitation, housing, staff assistance and supervision, vocational / day programming, and much more.

  **For:** Adults with Brain Injury who meet eligibility requirements.

  **Where:** Homes are located in one of five Maryland neighborhood communities.

  **When:** Upon discharge from University of Maryland Rehab and Orthopaedic Institute, Western Maryland Hospital Center, Deer’s Head Hospital, or Charlotte Hall Veterans Home.
Resources

- Brainline, www.brainline.org Website funded through the Defense and Veterans Brain Injury Center offers civilians, returning service members with brain injury, families and professionals a variety of information and resources regarding life after brain injury.
Thank you!