Adapting Your Practice

Recommendations for the care of Patients who are Homeless or Unstably Housed Living with the Effects of Traumatic Brain Injury.

Learning Lab June 24, 2017
Advisory Committee

Jan P. Caughlan, MSW, LCSW-C
Health Care for the Homeless, Inc.
Baltimore, Maryland

Lillian Gelberg, MD, MSPH
University of California Los Angeles
Los Angeles, California

Stephen W. Hwang, MD, MPH
St. Michael’s Hospital
Toronto, Ontario Canada

Darlene M. Jenkins, DrPH, CHES
National Health Care for the Homeless Council, Inc.
Nashville, Tennessee

Carolyn Lemsky, Ph.D., C.Psych.
Community Head Injury Resource Services of Toronto.
Toronto, Ontario Canada

Ben T. King, MPH
Seton Healthcare Family
Austin, Texas

Caitlyn Synovec, MS, OTR/L, CPRP
Health Care for the Homeless, Inc.
Baltimore, Maryland

Susan Lepore, BS
Rochester, Minnesota

Tom Tatlock, MD
Appleton, Wisconsin
Funding

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U30CS09746, a National Training and Technical Assistance Cooperative Agreement for $1,625,741, with 0% match from nongovernmental sources.
Disclaimer

This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be intended by HRSA, HHS, or the U.S. Government.
Basic Recommendations: Reduce Barriers to Care

Specific Program Recommendations: Specific Supports Provided

Specialized Program Recommendations: Interdisciplinary Care Provided
## Levels of Care

<table>
<thead>
<tr>
<th>Basic</th>
<th>Specific</th>
<th>Specialized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services are offered in a manner that reduces barriers to care.</td>
<td>Services that provide specific accommodations are provided.</td>
<td>The team is able to provide specialized intervention</td>
</tr>
</tbody>
</table>
- Screen for Brain Injury History
- Recognize Cognitive and Functional Impairment
- Accommodate Cognitive and Behavioral Symptoms
- Integrate with Community Resources
- Monitor and Manage Co-Occurring Health and Mental Health Issues
Overview

Introduction to the Practice Recommendations
Very brief review of brain injury
Screening for TBI
Assessing functional impairments
Basic Cognitive Compensation
Program recommendations

In the last section I’ll review the online resources that physicians can use to address the common medical difficulties that are observed.
What is Acquired Brain Injury?

• An insult that occurs after birth and causes damage to brain tissue. Causes may include...

  – Trauma
  – Stroke
  – Infection
  – Tumor
  – Hypoxia
  – Exposure to Toxins
Traumatic Brain Injury

- Contact Injuries
- Diffuse Axonal
- Penetrating Injuries
a) Early:
- Microglial activation
- Axonal shearing
- Interrupted axonal transport and axonal bulb formation

b) Disconnection within white matter tract

c) Structural network disconnection

b) Normal vs. TBI:
- Large-scale functional network disruption
A. Trauma causes the axon to twist and tear.

B. The result is permanent death of the brain cell.
**Glasgow Coma Scale**

<table>
<thead>
<tr>
<th>Adult &amp; 5yrs+</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye</strong></td>
<td></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>To speech</td>
<td>To speech</td>
</tr>
<tr>
<td>To pressure</td>
<td>To pressure</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Oriented</td>
<td>Alert, babbles, coos, words or sentences – normal for age</td>
</tr>
<tr>
<td>Confused</td>
<td>Less than usual ability, irritable cry</td>
</tr>
<tr>
<td>Words</td>
<td>Cries to pain</td>
</tr>
<tr>
<td>Sounds</td>
<td>Moans to pain</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Verbal</strong></td>
<td></td>
</tr>
<tr>
<td>Obeying commands</td>
<td>Normal spontaneous</td>
</tr>
<tr>
<td>Localizing</td>
<td>Withdraws to touch</td>
</tr>
<tr>
<td>Normal flexion (withdrawal)</td>
<td>Normal flexion (withdrawal)</td>
</tr>
<tr>
<td>Abnormal flexion</td>
<td>Abnormal flexion</td>
</tr>
<tr>
<td>Extension</td>
<td>Extension</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Best documented as: GCS 13 - E3,V5,M5. If section is unable to be assessed, report as NT (not testable), don't score as 1.

The GCS is a quick & well recognized assessment tool but has limitations (intubation, language barrier, drugs/alcohol, injury, anesthetics/sedatives, etc.). Each patient's individual clinical situation & local protocol should always be taken into account with proper medical training. Author & Publisher intend reference to be accurate & free of error but no guarantee can be made. & assume no liability for errors or inaccuracies.
Series of 40 patients (Courville, 1950)

Series of 100 patients (Bigler, 1984)
How many people have TBI?

- 500/100,000 (US)
- 166,455/year in Canada
- 5,000 (3%) die
- 27,000 (16%) are hospitalized
- 1.365 (76%) treated in ER
- Untreated?
- 2% of the population is living with the chronic effects of ABI

What causes TBI?

- Falls, 40.5%
- Struck by/against, 15.5%
- Unknown/Other, 19.0%
- Motor vehicle traffic, 14.3%
- Assaults, 10.7%
Non Traumatic Injury

Stroke

Tumor

Infection
Who is at highest risk for TBI?

- Males are about 1.5 times as likely as females to sustain a TBI
- 0 to 4 year olds and 15 to 19 year olds
- Certain military duties (e.g., paratrooper)
Continuum of TBI Severity

- **Mild TBI (concussion)**: Any LOC
- **Moderate TBI**: LOC ≥ 30 minutes
- **Severe TBI**: LOC > 24 hours

Least severe:
- Dazed, confused, gap in memory

Most severe:
- Loss of Consciousness (LOC)
- Coma
Severity

Mild
LOC < 30 min.
PTA /confusion resolves w/in 24 hrs

Moderate
LOC < 6 hrs. and/or changes on imaging

Severe
LOC > 6 hrs

Severity Distribution:
- Mild: 85%
- Moderate: 10%
- Severe: 5%
The following are some of the most common symptoms a person can experience with a concussion. **NO** two concussions are the same and you may experience some or all of these symptoms.

<table>
<thead>
<tr>
<th>Physical</th>
<th>Cognitive</th>
<th>Emotional/Behavioural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dizziness or Balance problems</td>
<td>Concentration</td>
<td>Sad/Depressed</td>
</tr>
<tr>
<td>Headache</td>
<td>Memory problems</td>
<td>Anxious</td>
</tr>
<tr>
<td>Nausea or Vomiting</td>
<td>Confusion</td>
<td>Irritability</td>
</tr>
<tr>
<td>Fatigue/Sleep disturbances</td>
<td>Feeling like you are &quot;In a fog&quot;</td>
<td></td>
</tr>
<tr>
<td>Blurry vision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity to light or sound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of consciousness (not always)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tinnitus (ringing in ears)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Prognosis

• 85-90% of individuals with concussion/mTBI recover within 30-days
• A minority of patients experience longer-lasting signs and symptoms of concussion/mTBI.
• Failure to diagnose and treat concussion/mTBI may explain why signs and symptoms persist in some cases.
• Moderate to Severe injuries generally result in lasting impairments
Why do some problems persist?
Single vs multiple injuries

• There is an additive effect
• Multiple mild injuries:
  – abuse, sport, falls
• Timing: close together or far apart
• Mild injuries can have a greater effect after other injuries
• Does having a brain injury history make you more prone to subsequent injuries? more severe injuries?
<table>
<thead>
<tr>
<th>Somatosensory</th>
<th>Motor</th>
<th>Cognitive</th>
<th>Emotional and Behavioural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>Hemiparesis</td>
<td>Impaired Attention</td>
<td>Depression</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Spasticity</td>
<td>Impaired Concentration</td>
<td>Anxiety</td>
</tr>
<tr>
<td>Dizziness</td>
<td>Slowed performance</td>
<td>Impaired Memory</td>
<td>Emotional Dysregulation</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>Poor coordination</td>
<td>Slowed Information processing</td>
<td>Impulsivity</td>
</tr>
<tr>
<td>Visual field cuts</td>
<td>Dysarthria</td>
<td>language impairments</td>
<td>Aggression/Irritability</td>
</tr>
<tr>
<td>Sensitivity to light/noise</td>
<td></td>
<td>Impaired visuospatial</td>
<td>Poor Initiation</td>
</tr>
<tr>
<td>Anosmia (lost sense of smell)</td>
<td></td>
<td>Impaired executive functioning</td>
<td></td>
</tr>
<tr>
<td>Aguesia (lost sense of taste)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cognitive Impairment After TBI

• Degree of neuropsychological impairment is greater soon after injury with recovery occurring over time

• At one year post-injury, there is a dose response relationship between length of coma and cognitive outcome

• More severe injury, more severe cognitive impairment
Predictors of lasting disability

Deeper Loss of Consciousness (lower GCS)
Longer Loss of Consciousness (past 3 months is considered irreversible)
Longer Post-traumatic Amnesia (longer than 14 days)
Prognostic Indicators

Positive Indicators
• Initial GCS>9 (Responsive)
• PTA<24 hours
• LOC<6 hours
• Limited imaging findings
• No dural penetration
• No pupillary response abnormalities
• No hypoxia
• No systemic complications

Negative Indicators
• GCS<9 (non-responsive)
• PTA>24 hours
• LOC>24 hours
• CT / MRI findings
• Pupillary response abnormalities
• Hypoxia
• Ocular motor abnormalities
• Secondary systemic complications
Education

- Cognitive Reserve Theory (Satz et al, 1993; Stern 2006)
  - Higher levels of education and intellectual functioning protect against functional impairment as a result of neurological insult.
- Educational level has a moderating effect on memory functioning after severe TBI
- One of the strongest predictors of social integration and outcome after TBI
Childhood Brain Injury

• Early insults alter the future development of the brain.
• Apparently mild injuries may have devastating long-term impacts.
Outcomes of Childhood Injury

Increase in general risk with brain injury

- psychological distress 52%
- attempting suicide 239%
- prescribed medication for anxiety, depression, or both 145%

Gabriella Illie (2015), St. Michael’s Hospital
Childhood TBI as a risk factor for SUD

Birth cohorts: Christchurch NZ (McKinlay & colleagues), Northern Finland (Winqvist, Timonen & colleagues)

Lifetime exposure: TBI Model Systems (Corrigan et al., 2013), TRACK-TBI (Dams-O’Conner et al., 2013)

Age and gender effects in animal models (Lowing et al. 2014; Mayeux et al., 2015; Teng et al., 2015; Weil et al., 2015)
Christchurch Birth Cohort
(McKinlay et al., 2008, 2009, 2014)

By late teens/early adulthood (16-25 y.o.)

– Those hospitalized with 1st mTBI < 6 y.o.: 3 times more likely to have a diagnosis of either alcohol or drug dependence by age 25

– Those hospitalized with 1st mTBI 16-21 y.o.: 3 times more likely to be diagnosed with drug dependence
Stress and Development

Early adversity leads to differences in brain development

- Maladaptive vigilance
- Risk taking
- Limited social development
Series of 40 patients (Courville, 1950)

Series of 100 patients (Bigler, 1984)
Impact of Brain Injury

- Attention
- Memory
- Reasoning
- Language
- Pragmatics

- Affective Processing
- Behavioural Planning
- Cognitive Resource Allocation
Ventral Tegmental Area –
Monitors the state of pleasure/pain

Sends Dopamine to excite Nucleus Accumbens and Amygdala

Functional correlates
• Memory
• Processing of
  • emotions
  • rewards
  • social cues
• Focusing attention
The “A-B-C’s” of Self-Regulation

• **A**ffective modulation
• **B**ehavioral planning
• **C**ognitive resource allocation
What is the impact of being blind to others’ emotions?

Problems with theory of mind....

Meeting the social contract...

Sociopathy...
Emotional Regulation

• Reading others’ emotion
• Emotional reactivity
  – Lability
  – Anger management
• Recognizing one’s own emotional state
Social communication mediates the relationship between emotion perception and externalizing behaviors in young adult survivors of pediatric traumatic brain injury (TBI)

Nicholas P. Ryan\textsuperscript{a,c,*}, Vicki Anderson\textsuperscript{a,b,c}, Celia Godfrey\textsuperscript{a,d,1}, Senem Eren\textsuperscript{a,1}, Stefanie Rosema\textsuperscript{a,d,1}, Kaitlyn Taylor\textsuperscript{a,c,1}, Cathy Catroppa\textsuperscript{a,b,c,1}

16 year follow up study of - N=34 Young adults
Mean age 20
10 severe, 24 mild-mod
Vs 16 matched non TBI controls

Severe TBI significantly worse on: affect naming and prosody-face naming

TBI group had greater social communication problems assoc with more externalising behaviour and poorer emotion processing

“poorer emotion perception creates social misunderstandings that lead to generation of ineffective or inappropriate responses ..[leading to] rejection [by peers and] elicit psychological distress reflected in externalizing behaviors that include aggression, rule breaking and intrusive conduct (Beauchamp and Anderson, 2010; Yeates et al., 2007)” Ryan et al, 2013
Somatic marking

• Using emotion to inform behaviour by marking memories with the appropriate feelings
The “A-B-C’s” of Self-Regulation

• Affective modulation

• Behavioral planning

• Cognitive resource allocation
Planning and Goal Setting and Multi-tasking

- Recognize when a plan would be helpful
- Analyze the steps that are required
- Pull together the resources
- Initiate the plan
- Monitor several activities simultaneously
What it looks like

- Disorganization
- Difficulty in completing tasks
- Failing to make a plan
- Grandiose planning
- Jumping to conclusions
- Failure to initiate activity
- Repeating the same mistakes
- Failing to follow a plan
- Stubbornness
Neuroprediction of future rearrest

Eyal Aharoni, Gina M. Vincent, Carla L. Harenski, Vince D. Calhoun, Walter Sinnott-Armstrong, Michael S. Gazzaniga, and Kent A. Kieh

Identification of factors that predict recurrent antisocial behavior is integral to the social sciences, criminal justice procedures, and the effective treatment of high-risk individuals. Here we show that error-related brain activity elicited during performance of an inhibitory task prospectively predicted subsequent rearrest among adult offenders within 4 y of release (N = 96). The odds that an offender with relatively low anterior cingulate activity would be rearrested were approximately double that of an offender with high activity in this region, holding constant other observed risk factors. These results suggest a potential neurocognitive biomarker for persistent antisocial behavior.

Could dysfunction in ACC be caused by TBI?

The “A-B-C’s” of Self-Regulation

• Affective modulation
• Behavioral planning
• Cognitive resource allocation
Cognitive Resource Allocation

Inattention
Sensory Flooding
Perseveration in Problem solving
Neuro-fatigue
What it looks like

• Difficulty with filtering out distraction and concentration
• Unable to tolerate busy/noisy environments
• Continues to use unsuccessful strategies
• Greater difficulty breaking from habit (capture errors)
• Derailing from tasks
Brain Injury and Homelessness

42% of Women
58% of Men
70% of TBIs occurred before homelessness

Cognitive Impairment

Up to 80% of people who access services may have some form of cognitive impairment (Burra, 2009).

Most will have interacting causes for their impairment.

- Disease
- Brain Injury
- Developmental disability
- Substance Use
- Cognitive abilities
Brain Injury is a signal for complexity

- Mental Health diagnoses
- Substance use Disorders
- Risk of arrest and incarceration
- Behavioural difficulties
- Victimization
- Increased risk for subsequent injury

- E.g. To et al., 2015
Brain Injury and Homeless Share Common Risk Factors

- Raised in low income homes
- Victims of domestic abuse
- Substance use disorders
- Serious Mental Illness
- Veterans
Brain Injury

Just because you can't see it doesn't mean it's not there

www.brainworksrehab.com
Screen for Brain Injury History

- Recognize Cognitive and Functional Impairment
- Accommodate Cognitive and Behavioral Symptoms
- Integrate with Community Resources
- Monitor and Manage Co-Occurring Health and Mental Health Issues
<table>
<thead>
<tr>
<th>Basic</th>
<th>Brief Screening Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific</td>
<td><strong>The Ohio Valley Brain Injury Identification Method</strong> (Corrigan and Bogner, 2007). In the public domain. Online training is available.</td>
</tr>
<tr>
<td>Specialized</td>
<td><strong>The Ohio Valley Brain Injury Identification Method</strong> (Corrigan and Bogner, 2007). In the public domain. Online training is available.</td>
</tr>
</tbody>
</table>
Case Study - Alex

42 year old single man
Seizure witnessed at the Shelter and he was referred to ER.
24 ER admissions in the last 2 years.

Seizures
Threats of suicide
Disoriented and Intoxicated
Alex...

- Rotated among ERS when distressed.
- Questioned if some complaints were feigned.
- Poor historian
- At 18 he was diagnosed with schizophrenia.
Alex...

Left supported housing in another city after fighting with a co-resident
Challenges

Multiple co-morbid conditions require integrated care

Cognitive impairment
  Impulsivity
  Memory
  Impaired Awareness

Psychotic Disorder

Opioid use disorder

History of incarceration for assault and theft
Screening

Why screen?

• Brain Injuries may be invisible.
• Some clients may be unaware of their brain injury
• Many injuries are documented in the medical record.
Ohio State University TBI Identification Method

Knowing a history of traumatic brain injury can help all health care and social service professionals provide effective treatment to their patients and clients. Drs. John Corrigan and Jennifer Bogner developed The Ohio State University Traumatic Brain Injury Identification Method (OSU TBI-ID) — a standardized, short, structured interview designed to elicit a rich lifetime TBI history. This online training helps professionals learn how to effectively utilize the OSU TBI-ID and includes video examples of interviews and a ready-to-print interview form.

We encourage users to print out a copy of the OSU TBI-ID interview form prior to beginning the online training.
Ohio State Brain Injury ID Method

3-5 minute interview
Designed to detect traumatic injury, not injuries due to other causes.

Self-report history, not a ‘test’.

Found to be valid and reliable
Cuing to Elicit Injuries

Please think about injuries you have had during your entire lifetime, especially those that affected your head or neck. It might help to remember times you went to the hospital or Emergency room. Think about injuries you may have received from a car or motorcycle wreck, bicycle crash, being hit by something, falling down, being hit by someone, playing sports or an injury during military service.
Injury With Loss of Consciousness

a. Thinking about any injuries you have had in your lifetime, were you ever knocked out or did you lose consciousness?

____ Yes

____ No (IF NO, STOP HERE)
Worst Injury

b. What was the longest time you were knocked out or unconscious? (Choose just one; if you are not sure please make your best guess.)

_____ knocked out or lost consciousness for less than 30 min

_____ knocked out or lost consciousness between 30 min and 24 hours

_____ knocked out or lost consciousness for 24 hours or longer
First Injury

c. How old were you the first time you were knocked out or lost consciousness?

______ years old
This question allows 3 indicators of lifetime history of TBI to be computed:

• Positive for a lifetime history for TBI with loss of consciousness (yes/no)

• Worst TBI with loss of consciousness (LOC) was mild, moderate or severe (no TBI with LOC, mild TBI with LOC, moderate TBI, severe TBI)

• Age at first TBI with loss of consciousness (in years)
### Ohio State University TBI Identification Method — Interview Form

**Step 1**
Ask questions 1-5 below. Record the cause of each reported injury and any details provided spontaneously in the chart at the bottom of this page. You do not need to ask further about loss of consciousness or other injury details during this step.

I am going to ask you about injuries to your head or neck that you may have had anytime in your life.

1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.
   - [ ] No  [ ] Yes—Record cause in chart

2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle, or ATV?
   - [ ] No  [ ] Yes—Record cause in chart

3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground?
   - [ ] No  [ ] Yes—Record cause in chart

4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head?
   - [ ] No  [ ] Yes—Record cause in chart

5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents.
   - [ ] No  [ ] Yes—Record cause in chart

**Interviewer instruction:** If the answers to any of the above questions are “yes,” go to Step 2. If the answers to all of the above questions are “no,” then proceed to Step 3.

---

**Step 2**
Interviewer instruction: if the answer is “yes” to any of the questions in Step 1 ask the following additional questions about each reported injury and add details to the chart below.

Were you knocked out or did you lose consciousness (LOC)?
- If yes, how long?
- If no, were you dazed or did you have a gap in your memory from the injury?
- How old were you?

Have you ever had a period of time in which you experienced multiple, repeated impacts to your head (e.g. history of abuse, contact sports, military duty)?
- If yes, what was the typical or usual effect—were you knocked out (Loss of Consciousness - LOC)?
- If no, were you dazed or did you have a gap in your memory from the injury?
- What was the most severe effect from one of the times you had an impact to the head?
- How old were you when these repeated injuries began? Ended?

---

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cause</strong></td>
<td><strong>Loss of consciousness (LOC)/knocked out</strong></td>
<td><strong>Typical Effect</strong></td>
</tr>
<tr>
<td></td>
<td>No LOC</td>
<td>&lt; 30 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**If more injuries with LOC:** How many? Longest knocked out? How many ≥ 30 mins.? Youngest age?

---

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Typical Effect</th>
<th>Most Severe Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cause of repeated injury</strong></td>
<td>Dazed/ memory gap, no LOC</td>
<td>LOC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

• WORST — 30 minutes or more LOC

• FIRST — TBI with LOC

• MULTIPLE — had 2 or more TBIs close together, including a period of time when they experienced multiple blows to the head even if apparently without effect.

• RECENT — a mild TBI in recent weeks or a more severe TBI in recent months

OTHER SOURCES — any TBI combined with another way that their brain has been impaired.

(Corrigan & Bogner, 2007)
Alex’s Screening

Car Accident at age 13, with two weeks coma and 8 months of hospitalization.

Several possible subsequent injuries—unable to say how many falls related to seizures he has had. Unable to give the dates of injury—estimates that there were about a dozen.
Brain Injury Screening Questionnaire
Birc@mountsinai.org

Screening and Assessment Tools for Professionals

- Get Involved In Research
- Learn About Clinical Services
- Explore Our Resources

Contact Us
Brain Injury Research Center of Mount Sinai
Icahn School of Medicine at Mount Sinai
Tel: 212-241-5152
Fax: 212-241-0137
birc@mountsinai.org
Screen for Brain Injury History

Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Monitor and Manage Co-Occurring Health and Mental Health Issues
Recognize Cognitive and Functional Impairment

Raise awareness (online training)

Cognitive Screening

Neuropsych. Assmt.
## RECOGNIZE COGNITIVE IMPAIRMENT

<table>
<thead>
<tr>
<th>Basic</th>
<th>A person who reports a history of brain injury and/or difficulties with behaviour and follow-through should be regarded as risk factors for cognitive impairment. At a minimum, staff members should use the resources that are referenced in this guideline to become familiar with how cognitive impairment may present in the clients they serve.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is a known history of brain injury, ask about previous neuropsychological assessments.</td>
</tr>
<tr>
<td>Specialized Recommendation</td>
<td>The team has access to consultation by, or include brain injury professionals who can provide specialized assessments (e.g. functional safety assessments, neuropsychological assessments, speech and language assessments) that are suitable to enable diagnosis and/or access to entitlement programs.</td>
</tr>
</tbody>
</table>

**Resource:**
- Online training resources: [http://ohiovalley.org/informationeducation/tbi101/](http://ohiovalley.org/informationeducation/tbi101/)
- [www.brainline.org](http://www.brainline.org)
Common cognitive difficulties that may be subtle include:

- Communication (receptive/expressive/non-verbal)
- Cognitive slowing
- Impaired Attention
- Impaired new learning and recent memory
You are likely to see...

• Problems with the regulation of thoughts, feelings and behaviors
• Difficulty benefiting from experience, and remembering information from one session to the next
• A disconnection of Intention and behavior
• Not fitting in well with others and the environment because of problems perceiving, understanding, and behaving according to social norms

• Differences in communication or learning style making participation in didactic training and group interventions more difficult and frustrating
Online training
Available Training

- Agitation with TBI
- Substance Use and TBI

Web-based TBI Training Modules (CEUs)
- Incidence and Prevalence
- Neurobehavioral Impairments
- Impact on Lives
- OSU TBI Identification Method
- Accommodating the Symptoms of TBI

Webinar for Service Providers: What if There's a TBI? (CEUs)

Substance Use Materials from OVC

https://tbi.osu.edu/modules
Introductory Module

In this module you will learn what TBI is, what causes it, who this is happening to and why, how common TBI is, and what can be done about it.

1.0 Continuing Education Credit(s)

Neurobehavioral Impairments

In this module you will learn about the effects of a TBI on individuals, and that these effects may be different for each person. This module will also walk you through executive functions of t ... (Read More)

1.0 Continuing Education Credit(s)

Impact on Lives

In this module you will learn about the long-term consequences of TBI. You will learn about the impact that TBI has on an individual’s health, finances, housing, productivity, relationships, an ... (Read More)

1.0 Continuing Education Credit(s)

Accommodating the Symptoms of TBI

In this module you will learn to recognize the common symptoms of TBI and how to incorporate compensatory strategies into your treatment practices. These simple, yet effective accommodations yo ... (Read More)

1.0 Continuing Education Credit(s)

TBI Identification Method

The Ohio State University (OSU) Traumatic Brain Injury (TBI) Identification Method (OSU TBI-ID) is a standardized procedure for eliciting a person’s lifetime history of TBI via a 3-5 minute str ... (Read More)
The flow of cognition

- Alertness
- Attention
- Processing of information
- Memory
- Executive Functioning
Problems with Attention

- Trouble staying tuned-in
- Seeks stimulation
- Looks bored
- Restlessness/fidgeting
Alex

Difficulty with both focusing and sustaining attention
What to do

Command Attention
- Eye contact
- Use notes to focus

Break down information
- Talk in short sentences
- One point at a time

Make it active
- Get repetition
- Rehearse
- Repeat
- Allow walking/fiddling
Other things to do...

- Remove distractions
- Talk in short sentences (not paragraphs)
- Repeat information
- Make Notes
- Check comprehension

- Make stressors predictable (if they can’t be avoided).
- Rehearse responses
- Ask clients how they will remember future events
Problems with Processing Information

- Only hears part of a message
- Seems to get tired easily
- Seems very passive
- Looses attention (spaces out)
Alex

• Moderately slowed auditory processing.
• Able to read words at a 7\textsuperscript{th} grade level, but doesn’t seem to be able understand or retain information he’s read.
• Poor memory for episodes but is able to learn routines
Alex--Observations

Seems to lose his place in the interview
Repeats information
Shelter staff report repeated rule violations, such as smoking in the wrong place
Did not complete the housing application he was given
Went to get lunch, even though he was waiting for an appointment.
Can’t name his meds or what they’re for
What you can do

- Pause
- Write notes while you speak
- One idea at a time
- Ask for a repetition

Slow it down.

Simplify

Check-in
Problems with Memory

- Inconsistent in activities
- Trouble recalling events
- Difficulty Learning
- Lack of follow-through
- Seems to make things up
Memory

Most often impaired

• Learning new information
• Recalling new information without cues
• Remembering to do things in the future
• Memory for context (source memory)
• Memory of episodes after injury

Often show less impairment

• Memory for faces
• Recognition (cued) memory
• Procedural learning (learning by habit/routine)
• Biographical information (pre injury)
Alex

• Moderate problems organizing information to remember
• Once something is learned he remembers it well
• Learns routines well
• Trouble paying attention makes it difficult for him to register new information
What you can do

• Write Stuff Down

• Repeat and ask for repetition

• Announce topics
• Point out relationships

• Notes/reminders in phone
• Use routines

Use Notes

Repeat

Provide organizers

Teach Strategies
Problems with initiation

- Appears unmotivated
- Identifies goals, but doesn’t act
- Needs constant reminders to complete a task
- Others describe as ‘lazy’
Alex

• Alex has a hard time getting going in the morning. It’s tough to get out of a warm bed, but he will do it if he has something he wants to do.

• Spends a lot of his time watching TV until someone invites him to do something.

• Seems to procrastinate.
How to help

Small Steps
- Create clear plans with small steps

Check Lists
- Signs, prompts
- Routines/lists

Cues
- Alarms
- Calls
- Timers
Executive Function

• Planning
• Mental Control
  – Initiating activity
  – Switching tasks
• Emotional Control
• Self Awareness
Definitions

“The executive functions of the brain can be defined as the complex process by which an individual goes about performing a novel problem-solving task from its inception to its completion.”

Sbordone (2000)
The “A-B-C’s” of Self-Regulation

- Affective (emotional) regulation
- Behavioral planning
- Cognitive resource allocation
Emotional Regulation

- Difficulty getting along with others
- Lacks empathy
- Behaviour that seems childlike
- Emotional lability
- Misinterprets others’ intentions
How to Help

Simplify Social Situations
- Articulate clear rules and roles

Teach client about the disability
- Feedback from an assessment
- In the moment

Encourage Compensation
- Practice empathy
- Ask / Don’t guess
Alex

• What others say about him….
  – He has no sense of humor—can’t understand when I’m being sarcastic
  – Likes the sort of humor little kids like—slapstick
  – He’s pretty gullable
  – He doesn’t show much emotion, and when he gets angry he pops. Then he can’t understand what the big deal was
Flooding

Overstimulation

Sensory overload

Luxury noise, stress, music, cooking, relationships, nighttime, paying bills, big crowds.

Touch: darkness, scary movies, driving, unexpected changes, summer heat, bright lights.

Overload: calls, uncomfortable,_

Responses: summer heat.
Emotional Mind

Angry

→ Short / sweat

→ Breath / things

→ Self harm

Replacement Behaviours

- Use a towel on the bed.
- Use ice for strong physical sensation

Feel proud.

Have my money

- No legal problems

People will get along with you
Sensory and Emotional Flooding

- Appears irritated, or shuts down in busy places
- Closes eyes when thinking/speaking
- Loses chain of thought
- Frequent requests for breaks (cigarettes, BR)
Alex

Has a tendency to run away when things are difficult.
Seems tense in busy places.
Strategies to Manage Flooding

• Know what’s happening

• Identify triggers

• Support clients to develop their own strategies
  – Limiting exposure to the triggers
  – Using techniques to reduce arousal
  – Engage planning and problem-solving
Help the client predict stress

- e.g. “There may be a long wait…”
- It will be busy there.

Encourage self-monitoring

- Identify symptoms of stress
- “Cue taking the emotional temperature

Plan for compensation

- Ear plugs/phones
- Identifying times/areas for breaks

Environment

- Quiet break areas
- Small groups
Alex

• Alex has trouble making simple plans. As a result he’s often late.
• When there’s a new problem he tends to ignore it until someone calls it to his attention.
• He sometimes says he’d like to do something, like save money, but couldn’t tell you about how he’d do it.
• He’s impulsive, and might forget a plan that has been made and do the easy or fun thing in the moment.
Delay Discounting

Choosing a small immediate reward in lieu of a larger delayed reward
What do problems with delay discounting look like?
How to help – Focus on Harm Reduction

Support the client to remember goals
- Goal Poster
- Totems
- Top reasons for change

Behavioural incentives to increase participation
- Coffee/snacks
- Incentives for treatment success

Immediate Feedback about performance
- Urine testing (offered collaboratively)

Pair less favored with more favored Tasks
...Requires memory, perception, reasoning and other cognitive functions working in concert.
Alex

- Knows about his brain injury but doesn’t think that there’s a problem
- Alex has often refused treatment/support
What you can do to help

- Predict performance
- Evaluate Performance
- Track Performance
Accommodation BASIC

Staff members take time to build a working alliance with clients who present with signs of cognitive impairments.

Staff members explore the potential for cognitive difficulties when a client presents with difficulty in following through with tasks, complying with rules or communicating their needs and wishes.
Accommodation Specific

The team has a member with brain injury training and experience that can provide guidance.

The team is able to create individualized support plans based on the recommendations of a trained professional.
Specialized Services

The team has access to or includes brain injury professionals including an occupational therapist, social workers speech and language therapists, neuropsychologist and physiatrist as well as rehabilitation nursing
Accommodation Specialized

The team provides specialized care. Specific programming is developed, including supported housing options that accommodate cognitive impairment.
Assessing Functional Impairment

Observation and Interview

WHODAS (self-report) and Observation

Specific

BASIC

Specialized

WHODAS Detailed functional assessments
Assessment Specific

There is a team member who has training and experience in recognizing and evaluating cognitive and functional impairment and can perform screening using standardized measures.

Cognitive screening is conducted by, or under the supervision of a trained professional who supports the interpretation of findings and assists in the development of recommendations.
Assessment Specialized

The team has access to professionals that can provide diagnostic evaluations that enable access to diagnosis specific programs and/or disability entitlement programs.
Functional Impairment

Activities of day to day functioning that are negatively affected.

Basic activities of daily living (feeding, bathing, toileting, dressing)

Instrumental Activities of Daily living (cooking, cleaning, money management, laundry, etc.)

Social Interaction

Social Participation
Signs of Functional Impairment

Difficulties with grooming
Persistent “rule violations”
Conflict in social interaction
Difficulty in Providing History
Trouble keeping appointments
Difficulty following through
Interview Strategy

• Broad open-ended questions
  – Allows a window into the organization and thought process.

• Prompts that zone in on relevant content.
  – Allows the interviewer to get a sense of limits related to communication, memory and organization.
Tell me about your day?
Do you hear about routines?
What do you do first?
How do you take care of….bathing, laundry, getting something to eat?
That sounds like a great plan...how often are you able to do that? What gets in the way?
WHODAS

• Generic assessment for health and disability
• Used Across Diseases
• 5-20 minutes to administer
• Applicable across cultures and settings
• Linked to the ICF Disability and Health
WHODAS 2.0 Domains

Cognition: Understanding and Communicating

Mobility: Getting Around

Self-Care: hygiene, dressing, eating & staying alone

Getting Along — interacting with People

Life Activities - home, work, leisure, school

Participation in Society — joining community activities
Available Forms

• 12 item screening form
• 36 item assessment form
  – Self-report
  – Interview
  – Proxy report
  Simple scoring and weighted scoring

12 + 24 (screening and follow-up items)
Frames of Reference for Items

- Degree of difficulty (pain, slowness, change)
- Due to health conditions
- Past 30 days
- Averaging good and bad days
- Responding as the client *usually* does an activity
- Items not experienced in the last 30 days are not rated
WHODAS Technical Specs

• Excellent reliability and validity
• Consistent with the International Classification of Functioning, Disability and Health (ICF)
• Sensitive to Intervention
• Simple/Complex Scoring
WHODAS Manual

WHODAS site
12-item version, self-administered

This questionnaire asks about difficulties due to health conditions. Health conditions include diseases or illnesses, other health problems that may be short or long lasting, injuries, mental or emotional problems, and problems with alcohol or drugs.

Think back over the past 30 days and answer these questions, thinking about how much difficulty you had doing the following activities. For each question, please circle only one response.

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme or cannot do</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>Standing for long periods such as 30 minutes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>Taking care of your household responsibilities?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S3</td>
<td>Learning a new task, for example, learning how to get to a new place?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S4</td>
<td>How much of a problem did you have joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S5</td>
<td>How much have you been emotionally affected by your health problems?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[http://www.who.int/classifications/icf/WHODAS2.0_12itemsSELF.pdf](http://www.who.int/classifications/icf/WHODAS2.0_12itemsSELF.pdf)
WHODAS 36 item

WHODAS 2.0
World Health Organization Disability Assessment Schedule 2.0
36-item version, self-administered

Patient Name: ____________________  Age: ______  Sex: ☐ Male  ☐ Female  Date: ________________

This questionnaire asks about difficulties due to health/mental health conditions. Health conditions include diseases or illnesses, other health problems that may be short or long lasting, injuries, mental or emotional problems, and problems with alcohol or drugs. Think back over the past 30 days and answer these questions thinking about how much difficulty you had doing the following activities. For each question, please circle only one response.

<table>
<thead>
<tr>
<th>Numeric scores assigned to each of the items:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the last 30 days, how much difficulty did you have in:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Understanding and communicating</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D1.1 Concentrating on doing something for ten minutes?</td>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
<td>Extreme or cannot do</td>
</tr>
<tr>
<td>D1.2 Remembering to do important things?</td>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
<td>Extreme or cannot do</td>
</tr>
<tr>
<td>D1.3 Analyzing and finding solutions to problems in day-to-day life?</td>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
<td>Extreme or cannot do</td>
</tr>
<tr>
<td>D1.4 Learning a new task, for example, learning how to get to a new place?</td>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
<td>Extreme or cannot do</td>
</tr>
</tbody>
</table>

http://www.who.int/classifications/icf/WHODAS2.0_36itemsSELF.pdf
Adaptive Behaviour Assessment System - 3

Harrison and Oakland (2015).
ABAS - 3

• Birth to 93 years
• Self, other and observation formats
• Administered by a professional with testing/evaluation training, e.g. Occupational Therapist, social worker, Psychologist
• Can be used as a part of an assessment to qualify and individual for disability entitlements
ABAS-3

Domain Areas
  Conceptual
  Social
  Practical
Skill Areas: Communication, community use, functional academics, health and safety, home or school living, leisure, motor, self-care, self-direction, social and work
Intervention Planner
Adult form

• 239 items
• Ratings:
  0 = unable to perform the task
  1 = never or almost never performs the task
  2 = performs the task sometimes
  3 = always or almost always performs the task
• 45-60 minutes admin time
## Communication

<table>
<thead>
<tr>
<th></th>
<th>Ability</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Says the names of other people (for example, “Mama,” “Daddy,” or names of friends).</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Says “Hello” and “Good-bye” to others.</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Answers the telephone by saying “Hello.”</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Uses sentences with a noun and verb.</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Names 20 or more familiar objects.</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>States his or her home address, including zip code.</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Gives verbal instructions to others that involve two or more steps or activities.</td>
<td>0</td>
</tr>
<tr>
<td>Raw Score to Scaled Score Conversions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptive skill area</td>
<td>Raw score</td>
<td>Scaled scores</td>
</tr>
<tr>
<td>Communication</td>
<td>44</td>
<td>2</td>
</tr>
<tr>
<td>Community Use</td>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>Functional Academics</td>
<td>56</td>
<td>6</td>
</tr>
<tr>
<td>Home Living</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>Health and Safety</td>
<td>43</td>
<td>2</td>
</tr>
<tr>
<td>Leisure</td>
<td>56</td>
<td>9</td>
</tr>
<tr>
<td>Self-Care</td>
<td>39</td>
<td>1</td>
</tr>
<tr>
<td>Self-Direction</td>
<td>56</td>
<td>6</td>
</tr>
<tr>
<td>Social (Work)</td>
<td>67</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sum of scaled scores</th>
<th>38</th>
<th>14</th>
<th>17</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conceptual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sum of Scaled Scores to General Adaptive Composite (GAC) and Adaptive Domain Score Conversions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of scaled scores</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>General Adaptive Composite (GAC)</td>
</tr>
<tr>
<td>Conceptual</td>
</tr>
<tr>
<td>Social</td>
</tr>
<tr>
<td>Practical</td>
</tr>
</tbody>
</table>
Cognitive Assessment

Domains

Orientation
Attention/Working Memory
New Learning and Memory
Language
  Expressive/Receptive
Executive
  Problem-solving Judgement
Neuropsychological Assessment

- Sensory
  - Olfaction
  - Primary Visual Perception
  - Tactile

- Psychological Status

- Effort

Less often: Emotional perception and Response to reward
MOCA

www.mocatest.org
"Please draw a line going from a number to a letter in ascending order. Begin here [point to (1)] and draw a line from 1 then to A then to 2 and so on. End here [point to (E)]."
Point to each figure and say:

“Tell me the name of this animal.”
Considerations in Interpretation

- Education effects
- Effort
- Focal versus Diffuse Impairment
A comprehensive Assessment considers…

Full History: Developmental, health, education and occupation
Current situation: Psycho-social, stressors
All Potential Sources of cognitive impairment
Engagement in Testing: Attitude toward testing, sleep, Sensory impairments
Variations in Functional Status

Difference between ‘Say and Do’.

Variation Across time.

The impact of emotional state

Metabolic Factors

Fluctuations that are more extreme suggest dysregulation
Client Eligibility

- Used Seaton House
- Homeless or precariously housed
- No Access to a family physician
Closure of Seaton House shelter delayed as city struggles to secure funding

Seaton House, Toronto’s biggest shelter, was originally slated for demolition this year as part of a larger effort to revitalize the area.
Seaton House Numbers

- 634 Bed
- To be developed into 100 emergency shelter spaces
- 378 Long term care beds
- 130 Assisted Living Units and an affordable housing component
Preliminary Data N=45

- Ave. Age = 56.4
- Age Range 25-78
- Ave. Education = 11.5 years
- 82% homeless
- 4% independently housed
- 4% supported housing

- 51% documented brain injury
- 89% Problematic Substance Use
  - 42% alcohol
  - 8.9% cannabis
  - 15.6% other
  - 22% poly

Shyla, Roy and Proulx 2014 and personal communication, Sylvain Roy, 2015
Nature of Cognitive Impairment

• Brief cognitive status examination
  – 28% impaired
  – 53% borderline-to-impaired
  – 71% below average

• Complex Attention
• Immediate and Delayed Memory
• Processing Speed
• Mental Flexibility

Shyla, Roy and Proulx 2014 and personal communication, Sylvain Roy, 2015
Findings

Learning and Memory
- 59.5 some problem
- 47.6 impaired enough to require some accommodation

Registering new information
Recalling information
Recognizing information that has been learned
Remembering information in context (source memory)

Shyla, Roy and Proulx 2014 and personal communication, Sylvain Roy, 2015
Findings

Executive Functioning

- 70% cognitive flexibility, complex attention and cognitive processing speed.
- 30% had severe impairments
- 42% unable to generate solutions to common situations (e.g. responding to fire)

Reading

- 37% below average
- 18% borderline (difficulty reading labels/instructions)
- 12% (5) profoundly impaired

Affect Naming

- 52% borderline to impaired
Hostel 250
Long-term Care 135
Annex 133 (harm reduction)
The work to be done…

- Only 200 clients will qualify for the new building
- 400 will need permanent re-location
- Triage
- Recommendations for care
Rapid Assessment

Brief interview with staff members:

Confidence Rating
Overall rating of how difficult the individual is to care for
Co-morbidities, such as mental health and addictions
Rule-breaking
Suspicion of neurocognitive impairment/disease
Estimate of the amount of care required
Homeless Clients in Hospital CAMH

Screening to assess 111 clients who are homeless, but hospitalized.

- 24% with brain injury
- 70% rated as difficult to care for
- 100% had substance use that interfered with housing stability
- 98% cognitive impairment on testing
- 37% likely developmental disability
Inner City Family Health Team (ICFHT)

Dr. Tomislav Svoboda
Jessica Crawford, Dr. Sylvain Roy, Dr. Radek Budin,
Rapid Screen → Referral to Assessment

Brief Screen → Positive Screens referred for full Neuropsych

Connect to Services
<table>
<thead>
<tr>
<th>INTEGRATE WITH COMMUNITY RESOURCES</th>
<th>Teams reach out to local and state brain injury associations to learn about available community-based programs.</th>
<th>Teams develop active partnerships with brain injury and other social services and may co-manage care.</th>
<th>Teams provide specialized care.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teams are aware of resources for developmental disability and aging</td>
<td>Active case management is provided.</td>
<td>Assessments and triage may be focused on obtaining entitlements and supports</td>
<td></td>
</tr>
</tbody>
</table>
Connecting to Brain Injury Resources

www.biausa.org

www.brainline.org

https://www.nashia.org/StatePrograms.asp
Maryland TBI

<table>
<thead>
<tr>
<th>programs that offer personal care and other supports.</th>
<th>Maryland, Baltimore Campus in 2012. See recommended actions pages 9-10.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brain Injury Waiver.</strong> There is one home and community based program in Maryland designed specifically for individuals with brain injury. It is a small specialty program designed to support individuals with moderate to severe deficits resulting from their injury who meet the financial, medical and technical eligibility for the program.</td>
<td><strong>Gap:</strong> Eligibility for the Brain Injury Waiver currently is based on “facility-based access,” meaning it is limited to individuals transitioning out of four state-operated chronic hospital/nursing facility settings and five state psychiatric hospital settings. This limits access to the program for individuals who are in need of this level of support and otherwise eligible but are not receiving treatment in one of those institutional settings. See recommended actions pages 9-10.</td>
</tr>
</tbody>
</table>

| **Behavioral Health Services.** Maryland | **Gap:** Behavioral Health providers do not routinely screen the |
Screen for Brain Injury History

Recognize Cognitive and Functional Impairment

Accommodate Cognitive and Behavioral Symptoms

Integrate with Community Resources

Monitor and Manage Co-Occurring Health and Mental Health Issues
<table>
<thead>
<tr>
<th>MONITOR AND MANAGE CO-OCCURRING HEALTH ISSUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinicians are aware of elevated risk for:</td>
</tr>
<tr>
<td>- Mental Health Diagnoses</td>
</tr>
<tr>
<td>- Seizure disorder</td>
</tr>
<tr>
<td>- Endocrine disorder</td>
</tr>
<tr>
<td>- Early onset dementia</td>
</tr>
<tr>
<td>- Sensory impairments</td>
</tr>
<tr>
<td>- Pain (headache)</td>
</tr>
<tr>
<td>- Neurological deficits</td>
</tr>
<tr>
<td>- As well as post-concussive symptoms</td>
</tr>
</tbody>
</table>

When referring for health care, teams provide information related to the history of brain injury, as well as any functional issues observed.

Teams can refer physicians to evidence based guidelines.

Teams include a brain injury-aware physician who is able to conduct a history and physical in consideration of the likelihood of cognitive impairment and history of trauma.

Physicians are aware of evidence based guidelines for medical care.

Teams include physicians and access to specialty services.
Monitor and Manage Co-occurring Health and Mental Health Issues

Sensory: sense smell, taste, hearing and balance
Fatigue and sleep disturbance
Headaches
Seizure disorders
Endocrine disorders
Early onset of cognitive decline
TBI Model Systems

http://www.msktc.org/tbi
Ontario Neurotrauma Foundation

Evidence based review of Moderate to Severe Brain Injury

http://www.abiebr.com/
Current Brain injury Guidelines

• Geared toward acute rehabilitation
• Very little guidance for service delivery in the community
• Little or no consideration given to marginalized populations
• VA has done a lot of work on returning vets with TBI/Blast injuries
Mild Brain Injury Guidelines


VA/DoD Clinical Practice Guideline for the Management of Concussion-Mild Traumatic Brain Injury Department of Veterans Affairs Department of Defense
Physical Examination

Practice Trauma-informed care
Be alert to evidence of brain trauma, including scars
Medical screening: Include endocrine function and neurological examination
Blood and Urine testing: compliance with medication and SUD
Assess for functional Impairment
Cognitive Assessment
Plan of care

Compensate for cognitive impairment with simplified written information, prompts and reminders

Case management supports should be considered

Use of incentives (and treatment incentives)

Creation of routines and routine environments

Interdisciplinary care
Patient Education

• Review findings in cognitive assessments
• Train in compensation strategies developed collaboratively with the client with specific functional goals
• Educate about the particularly adverse effects of substance use with brain injury ([http://Ohiovalley.org](http://Ohiovalley.org))
• Self management information for headache, fatigue and sleep
Complications

• Seizure risk (complicated by SUD)
• Risk for cognitive decline
• Risks of victimization, contact with the justice system, poor social interaction
• Increased risk of mental health and substance use disorders
• Sensory changes, including sensitivity (or insensitivity) to heat/cold
Managing Co-occurring Health Issues

- The introduction of medication for people living with brain injury should be initiated at the lowest possible dose and titrated slowly upwards.
- Consider the use of seizure medications that minimize cognitive impairment.
- For sleep disorders the use of melatonin and trazadone should be considered.
- Benzodiazepines and Non-benzodiazepine hypnotics should be used as a last resort.
Treatment of Depression

• Consider the use of selective reuptake inhibitors for their favorable side-effect profile
• Sertraline and citalopram have been found to be effective for some individuals
• Referral to a Psychiatrist may be required.
Clinical guidelines AP

https://braininjuryguidelines.org/