Overview of Brain Injury

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An Acquired Brain Injury (ABI) covers ALL injuries to the brain – including both non-traumatic such as anoxic (lack of oxygen to the brain), or toxic (introduction of toxins or chemicals to the brain) and traumatic (external blows to the head from an outside source). Regardless of the cause of the brain injury, consequences of brain injury may be similar and the interventions may be the same.

A Traumatic Brain Injury, “TBI” is a particular type of acquired brain injury; it is the result of an external blow to the head. A TBI can result in either an “open” head injury – where the skin and bone of the skull are actually penetrated and the brain may be exposed, or a “closed” head injury – where there is no lesion to the skin or skull but there is still damage to the brain within the skull.
An Acquired Brain Injury (ABI) covers ALL injuries to the brain – including both non-traumatic (such as anoxic (lack of oxygen to the brain), or toxic (introduction of toxins or chemicals to the brain), and traumatic (external blows to the head from an outside source)). Regardless of the cause of the brain injury, consequences of brain injury may be similar and the interventions may be the same.

A Traumatic Brain Injury, TBI” is a particular type of acquired brain injury resulting from an external blow to the head. A TBI can result in either an “open” head injury – where the skin and bone of the skull are actually penetrated and the brain may be exposed, or a “closed” head injury – where there is no lesion to the skin or skull but there is still damage to the brain within the skull.
Severity of Injury does not equate to Long-Term Outcomes

<table>
<thead>
<tr>
<th>Mild:</th>
<th>Loss of consciousness 0-30 minutes (concussion)</th>
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<tbody>
<tr>
<td>Moderate</td>
<td>Loss of consciousness &lt;24 hours</td>
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<tr>
<td>Severe</td>
<td>Loss of Consciousness &gt;24 hours</td>
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Concussion = American Academy of Neurology:

“any trauma induced alteration in mental status that may or may not include a loss of consciousness”
EFFECTS

- The way the person feels
  - Headache or fatigue
- How they think
  - Memory or concentration
- Change in emotions
  - Irritable or sad
- How they sleep
  - Trouble falling asleep
Symptoms may be subtle
- 90% of Concussions are not associated with a Loss of consciousness
- Concussive symptoms may develop over days

Often do not seek medical attention
- 90% of mTBI may go unreported

Peak 15-24 years, > age 75
- 2^{nd} peak: ≤ 5 years

Injuries caused by abuse significantly complicates this picture
Incidence/Prevalence

1.7 million Americans sustain a TBI annually
- 52,000 die
- 275,000 are hospitalized
- 1,365,000 million are treated and released from an Emergency Department

The number of people with TBI who are not seen in the ED or receive no care is unknown

CDC 2012
Colorado Statistics

Annually

103.9/100,000

- 950 Deaths
- 5,200 Hospitalizations
- 27,000 ED visits

Characteristics of Brain Injury and Accommodations
Domain Areas – Sensitive to TBI

- Attention
- Processing Speed
- Memory
- Sensory-Motor:
  - Fine Motor
  - Gross Motor

Adapted from Miller, Halstead-Reitan
Domain Areas Sensitive to a TBI

- New Learning
- Language:
  - Receptive
  - Expressive
  - Social Pragmatics
- Visual-Spatial
- Social/Emotional/Behavioral
- Executive Functioning
  - Initiation
  - Reasoning
  - Planning
  - Mental Flexibility

Adapted from Miller, Halstead-Reitan
Behavior and TBI

- Environment is a critical factor when evaluating “behavior”
- Antecedent management is the key
- Can’t vs. Won’t
- Skill acquisition, skill generalization, skill deficit
Physical Changes

- Decrease in motor skills/clumsiness
- Decreased vision/hearing/smell
- Dizziness
- Headaches
- Fatigue
- Increased sensitivity to noise and bright lights
Help individual compensate for Physical changes

- Keep environment quiet
- Keep noise and lights to a minimum
- Keep sessions short to minimize onset of headaches and fatigue.
- Schedule rest periods and breaks from planned activities.
Thinking Changes

- **Attention**
  - Reduced concentration
  - Reduced visual attention
  - Inability to divide attention between competing tasks

- **Processing speed**
  - Slow thinking
  - Slow reading
  - Slow formulation of either verbal and written responses
Help Individual compensate for changes in Attention

- Work on one task at a time.
- Limit distractions (both visual and verbal).
- Meet individually in quiet room.
- Redirect when focus is lost.
- Keep meetings time limited.
- Encourage rephrasing or recheck to ensure comprehension.
- Encourage client to take breaks when needed.
Help individual compensate for changes in Processing Speed

- Allow additional time for individual to provide written and/or verbal responses.
- Slow down the speed of your discussions, speaking concisely, making sure individual understands.
- Don’t rush the individual.
- Offer assistance with completing written forms.
Thinking Changes

Communication
- Difficulty finding the right words, naming objects
- Disorganized in communication
- Impaired interpersonal skills

Learning and Memory
- Information before TBI intact
- Difficulties with short term memory
- Reduced ability to learn new information
Help individual compensate for changes in Communication

- Help individual stay on topic; redirect when necessary.
- Ask individual to re-state aspects of a discussion to ensure comprehension.
- Encourage individual to prepare an “agenda” in advance.
- Avoid open-ended questions...use yes/no or structured formats where possible.
Help individual compensate for changes in Learning and Memory

- Provide written summary of discussed information
- Encourage individual to write down instructions/information, and review accuracy of these notes in session.
- Present new information in small, concise chunks.
- Check individual’s understanding
- Keep interactions brief to minimize memory demands
Thinking Changes in “Executive Functioning”

- Difficulty planning/setting goals
- Problems being organized
- Difficulty being flexible
- Difficulty problem solving
- Difficulty prioritizing
- Decreased awareness of thinking changes in self
Help individual compensate for changes in Executive Functioning

- Present information in factual manner, avoid abstract concepts.
- Help formulate alternative approaches.
- Provide written direction - summarize steps to be followed in plan. Breakdown “next” steps to be accomplished.
- Help prioritize and organize tasks to be accomplished.
- Keep things as structured as possible.
Emotional/Behavioral Changes

- Depression
- Anxiety
- Inability to get along with others
- Increased risk taking
- Difficulty with self initiation
- Irritability/agitation
- Increased impulsivity
- Socially inappropriate behavior
- Intolerant
- Rapid loss of emotional control (short fuse)
- Before-after contrasts
- Increased self focus
Help individual compensate for changes in Emotions/Behaviors

- Minimize anxiety with reassurance, education, and structure.
- Don’t interpret lack of emotion as a sign of lack of interest.
- Provide neutral, but direct, feedback if the individual behaves inappropriately.
- Suggest breaks if the individual becomes irritable or agitated.
- Point out possible consequences of decisions, short- & long-term
Help individual compensate for changes in Emotions/Behaviors

- Establish an agenda and follow it
- Minimize the unexpected
- Provide advance notice of an upcoming change
- Avoid discussion when individual is fatigued or over-stimulated
- Provide written outline of expected behaviors and responsibilities
Resources

- Brain Injury Alliance of Colorado
  www.biacolorado.org

- Colorado Brain Injury Program
  www.tbicolorado.org

- Colorado Department of Education
  www.cokidswithbraininjury.com
www.brainline.org

National On-Line Resource Center on Violence Against Women
(http://www.vawnet.org/special-collections/DVBRAINinjury.php#200)

www.usabia.org

www.cdc.gov