Brain Injury Association, Inc.

Brain Injury Awareness Presentation

Creating a better future through brain injury prevention, research, education and advocacy
What We Want You to Learn

- Why brain injury is an important public health concern
- What the causes and consequences of brain injury are
- How brain injury may affect behavior, relationships and the community
- What you can do to help persons with brain injury and their families
Definitions

**Traumatic Brain Injury (TBI)** is an insult to the brain caused by an external physical force.

**Acquired Brain Injury (ABI)** is an injury to the brain which is not hereditary, congenital or degenerative that has occurred after birth. (Includes anoxia, aneurysms, infections to the brain and stroke.)
Definitions

**Traumatic Brain Injury (TBI)** is an insult to the brain, not of a degenerative or congenital nature, caused by an external physical force that may produce a diminished or altered state of consciousness, which results in an impairment of cognitive abilities or physical functioning. It also can result in the disturbance of behavioral or emotional functioning.
**Definitions**

**Acquired Brain Injury (ABI)** is an injury to the brain which is not hereditary, congenital or degenerative that has occurred after birth.

An acquired brain injury is an injury to the brain that has occurred after birth. Causes of ABI include external forces applied to the head and/or neck (traumatic brain injury), anoxic/hypoxic injury (e.g., cardiopulmonary arrest, carbon monoxide poisoning, airway obstruction, hemorrhage), intracranial surgery, vascular disruption, infectious diseases, intracranial neoplasms, metabolic disorder, seizure disorders and toxic exposure.)
Brain Injury is the “Silent Epidemic”

It is a largely unrecognized major public health problem
Why Brain Injury is Called the Silent Epidemic

Most people don’t know about brain injury, let alone its consequences or how it affects people.

Some brain injuries are not perceived as brain injuries when in fact they are.

Example: Concussions are a form of brain injury.
Silent Epidemic

The only cure for brain injury is prevention
No brain injury is too mild to ignore or too severe to lose hope
Scope of the Problem

- An estimated 5.3 million Americans – a little more than 2% of the population – currently live with disabilities resulting from brain injury (Centers for Disease Control and Prevention (CDC))
- 1.5 million people sustain a brain injury every year
- Every 21 seconds an infant, child, teenager or adult in the U.S. sustains a traumatic brain injury
- Leading cause of death and disability among children and young adults and leading cause of death until age 44
- 4th leading cause of death overall
- Each day 4,100 individuals sustain a traumatic brain injury
Approximately 1 in every 10 individuals is touched by brain injury
Other Statistics

- Traumatic brain injury results in 1½ times more deaths each year than AIDS
- More Americans died as a result of TBI between 1981 and 1993 than have been killed in all the wars in our history combined
- More than 50% of all motor vehicle crashes resulting in TBI involve alcohol
- Each year 230,000 persons are hospitalized with TBI and survive
Other Statistics

- 2/3 of firearm-related TBIs are classified as suicidal in intent
- Falls are leading causes of TBI for persons ages 65 and older; transportation-related injuries lead among persons ages 15-64
- 91% of firearm-related TBIs result in death
- 11% of fall-related TBIs prove fatal
- Fewer than 1 in 20 people with TBI will receive the rehabilitation that they need
Brain injury is the leading cause of death and disability in children and young adults.
TBI Incidence & Prevalence

- 1.5 million/yr injured
- 1 million/yr seek emergency care
- 230,000/yr are hospitalized
- 50,000/yr die with TBI
- 80,000/yr result in long-term disability
- 5.3 million Americans with TBI disability
- Up to 6.5 million Americans with TBI

CDC figures as of 4/00
Injury and Disability Prevalence Rates

- 400,000 with Spinal Cord Injuries
- 500,000 with Cerebral Palsy
- 2 million Americans with Epilepsy
- 3 million with Stroke disabilities
- 4 million with Alzheimer’s Disease
- 5 million with persistent mental illness
- 5.3 million with TBI disability
- 7.3 million Americans with mental retardation

National organizations’ web sites, 4/2000
Why Is This Happening and Why Haven’t I Heard about It Before?

More people are surviving brain injury than ever before because of:

- Better emergency response systems and faster transportation, e.g.
  - Expanded use of “911”
  - Widespread use of helicopters for transport of serious injury to trauma centers
Why Is This Happening and Why Haven’t I Heard about It Before?

- Improved medical technology and techniques
- Safety features such as car seatbelts, child safety seats and airbags

Thus, more people who have experienced a brain injury are surviving
50% of all people with brain injuries died 30 years ago; that number now has been reduced to 22%
It’s Harder than you Think!
Motor Coordination

1. Slightly lift your right foot off the floor
2. Begin circling that foot clockwise
3. Write your whole name in cursive
BIA Mission Statement

Creating a better future through brain injury prevention, research, education and advocacy
BIA Overview

- Founded in 1980 by family members and friends of persons with brain injury
- Network of state affiliates and hundreds of support groups across the country
The Brain Injury Association is the only national nonprofit organization working on behalf of individuals with brain injury and their families.
BIA Milestones

1970s - TBI death rate was 50+%  
1980s - National Head Injury Foundation (NHIF) founded; state “chapters” developed  
1990s - NHIF moves to Washington D.C.  
NHIF becomes the Brain Injury Association  
TBI Act passes  
James S. Brady elected board chairman  
1999 - TBI death rate is less than 22%
Service/Support Building Blocks

- Family Supports
- Trust Fund
- Trauma Registry
- Chartered State Affiliates
- Advisory Council
- TBI Act Grant
- Medicaid Waivers
Causes of Brain Injury

External force (trauma) applied to the head and/or neck

Most common causes of TBI are:

#1 Motor vehicle collisions
#2 Falls
Other Causes of Brain Injury

- Too little oxygen or blood flow in the brain (examples: heart attack, stroke, carbon monoxide poisoning, near suffocation)
- Infections of the brain
- Toxic exposure (examples: substance abuse, ingestion of lead, sniffing or huffing glue)
- Others
Brain Injury Dangers

- Vehicle Crashes: 50%
- Falls: 21%
- Firearms: 12%
- Sports/Recreation: 10%
- Other: 7%
Costs of Brain Injury

- Cost in U.S. alone is $48 billion annually
- Brain injury accounts for more years of lost productivity than any other injury
- Every dollar used for brain injury rehabilitation saves up to $35 in future medical costs
Anyone can get a brain injury!
Yet, some are more at risk than others

• In 1995 the highest rates of injury were for males age 15-24
• Males are two times more likely than females to sustain a brain injury
• Older adults are at risk from falls
• Individuals who have already sustained one or more concussions
No one is immune from getting a brain injury!
Types of Brain Injury

- Mild
- Moderate
- Severe
Mild Brain Injury

- A mild brain injury also is known as a “concussion”
- Brief (less than 15 minutes) or NO loss of consciousness
- A dazed, vacant stare right after the injury
- A normal neurological exam
Mild Brain Injury

- Delayed response to questions or commands
- Disorientation and foggy memory
- Headaches, dizziness or nausea
- Slurred speech
- Usually, no major complications (like hematoma)
Mild Brain Injury

75% of all brain injuries are mild
Mild Brain Injury

- Often, people with mild brain injury do not even go to the hospital or seek any treatment.
- Because signs and symptoms of mild brain injury are similar to other problems, it often is misdiagnosed.
Mild Brain Injury

- Symptoms may not appear until later. “Post concussive syndrome” can include temporary headaches, dizziness, mild mental slowing and fatigue.

- Symptoms of mild brain injury usually improve over 1-3 months.
Brain injury can occur even if there is no loss of consciousness
Moderate Brain Injury

A moderate brain injury is one that results in a loss of consciousness that can last minutes or a few hours and is followed by a few days or weeks of confusion.
Severe Brain Injury

Severe brain injury almost always results in prolonged unconsciousness or coma lasting days, weeks or even longer.
Brain injury is unpredictable in its consequences
Effects of Brain Injury

Brain injury affects who we are, the way we think, act and feel. It can change everything about ourselves in a matter of seconds.
Changes after a Brain Injury

The most important things to remember:

• A person with a brain injury is a person first
• No two brain injuries are exactly the same
• The effects of a brain injury are complex and vary greatly from person to person
• The effects of a brain injury depend on such factors as cause, location and severity
Simplified Brain Behavior Relationships

Frontal Lobe
- Initiation
- Problem solving
- Judgment
- Inhibition of behavior
- Planning/anticipation
- Self-monitoring
- Motor planning
- Personality/emotions
- Awareness of abilities/limitations
- Organization
- Attention/concentration
- Mental flexibility
- Speaking (expressive language)

Temporal Lobe
- Memory
- Hearing
- Understanding language (receptive language)
- Organization and sequencing

Parietal Lobe
- Sense of touch
- Differentiation: size, shape, color
- Spatial perception
- Visual perception

Occipital Lobe
- Vision

Cerebellum
- Balance
- Coordination
- Skilled motor activity

Brain Stem
- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration
### General Patterns of Dysfunction by Location of Injury

<table>
<thead>
<tr>
<th>Right Side of Brain</th>
<th>Left Side of Brain</th>
<th>Diffuse Injury</th>
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</thead>
<tbody>
<tr>
<td>Impairments in visual-spatial perception</td>
<td>Difficulties in understanding language (receptive language)</td>
<td>Reduced thinking speed</td>
</tr>
<tr>
<td>Left-neglect, or inattention to the left side of space or body</td>
<td>Difficulties in speaking or verbal output (expressive language)</td>
<td>Increased confusion</td>
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<tr>
<td>Decreased awareness of deficits</td>
<td>Catastrophic reactions (depression, anxiety)</td>
<td>Reduced attention and concentration</td>
</tr>
<tr>
<td>Altered creativity and music perception</td>
<td>Verbal memory deficits</td>
<td>Increased fatigue</td>
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<tr>
<td>Loss of the gestalt, or “big picture”</td>
<td>Decreased control over right–sided movements</td>
<td>Impaired cognitive functions across all areas</td>
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<tr>
<td>Visual memory deficits</td>
<td>Impaired logic</td>
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<tr>
<td>Decreased control over left-sided movements</td>
<td>Sequencing difficulties</td>
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- **Diffuse Injury**
  - Reduced thinking speed
  - Increased confusion
  - Reduced attention and concentration
  - Increased fatigue
  - Impaired cognitive functions across all areas

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Optional Slide 30.B

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BIA Community Awareness Presentation - 2000
Possible Changes after a Brain Injury

- Thinking changes
- Physical changes
- Personality and behavioral changes
Possible Changes after a Brain Injury

Thinking Changes

- Memory
- Decision making
- Planning
- Sequencing
- Judgment
- Processing speed
- Problem solving
  differences

- Persistence
- Organization
- Self-perception
- Perception
- Inflexibility
- Thinking
Possible Changes after a Brain Injury

Physical Changes

- Motor coordination
- Hearing and visual changes
- Spasticity and tremors
- Fatigue and/or weakness
- Taste and smell
- Balance
- Mobility
- Speech
- Seizures
Possible Changes after a Brain Injury

Personality and Behavioral Changes

- Depression
- Social skills problems
- Mood swings
- Problems with emotional control
- Inappropriate behavior
- Inability to inhibit remarks
- Lack of response to social cues

- Problems with initiation
- Reduced self-esteem
- Difficulty relating to others
- Difficulty maintaining relationships
- Difficulty forming new relationships
- Stress, anxiety & frustration
Processing Speed – quickly state the WORDS
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Recovery

- Measured in weeks, months and years
- Usually most rapid in the first six months
- Recovery from brain injury is slow and often incomplete

No brain injury is too mild to ignore or too severe to lose hope
What You Can Do To Help

- Offer understanding and support to a person with a brain injury and his/her family
- Become knowledgeable about the issue of brain injury
- Become a member/supporter of your state brain injury association
- Advocate for statewide services for individuals with brain injury and their families
- Support efforts to reduce preventable brain injury