

Brain Injury Substance Misuse and Mental Health



Keith Arnold, LCSW, CBIST

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Training Outline

- Definition of a Brain Injury
 - ABI, TBI, mTBI
- Brain Injury in the United States
 - Incidence, Prevalence, Cost, etc.
- Consequences of a Brain Injury
 - Cognitive, Behavioral/Emotional, Physical
- Brain Injury and Substance Misuse
- Brain Injury and Mental Health
- Resources

Definition of Acquired Brain Injury (ABI)

An ABI is an injury to the brain that has occurred after *birth* and is not hereditary, congenital or degenerative. The injury commonly results in a change in neuronal activity, which affects the physical integrity, the metabolic activity, or the functional ability of the cell. The term does not refer to brain injuries induced by birth trauma. Includes TBI and injuries caused by an *internal insult* to the brain.

Brain Injury Association of America (1997)

Examples of BI

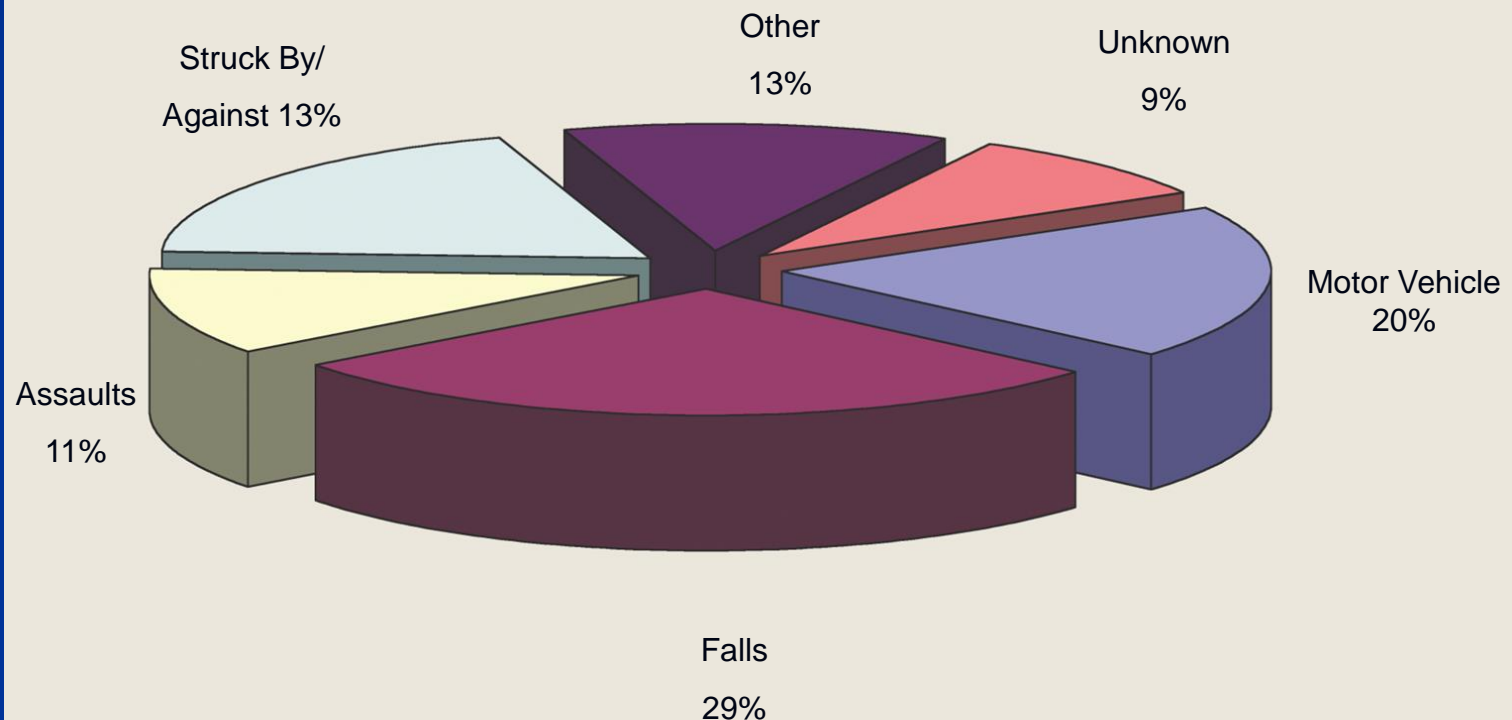
■ Traumatic Brain Injury (TBI)

- Falls
- Assaults
- Sports Injuries
- Gunshot wounds
- IPV
- Military Injuries (IEDs)

■ Acquired Brain Injury (ABI)

- Stroke
- Tumors
- Anoxia/Hypoxia
- Neurotoxins
- Infectious Disease
- Seizures

Cause of Injury in the United States



Reported Brain Injury in the United States according to the CDC

- At least **2.5** million TBIs occur in the United States each year. Appx 75% are mTBI.
- **53,000** result in death.
- **284,000** are hospitalized (2,256 in CT on avg.)
- **2,214,000** visit the Emergency Department.
- Every 21 seconds, one person in the U.S. sustains a TBI.
- Unknown number of TBIs receiving other medical care or no care.
- 3.2 – 5.3 million people living with TBI related disabilities
- Annual Cost of Traumatic Brain Injury including Lost Productivity and Medical Costs = **\$76,500,000,000** (**\$76.5 Billion**) Does not include non-traumatic BI.

Additional Findings

- Most likely group to sustain TBI include:
 - Older adolescents 15-19
 - Young Adults 20-24
 - Adults 65 and older
(75 and older has highest rate of TBI hospitalizations and death)
- Incarcerated population 25 – 87 %
- Iraq Veterans 10-20% - some level of TBI
- IPV – Estimated 2-4 million woman physically abused in the US annually. Some studies show evidence of over 50% having symptoms associated with TBI

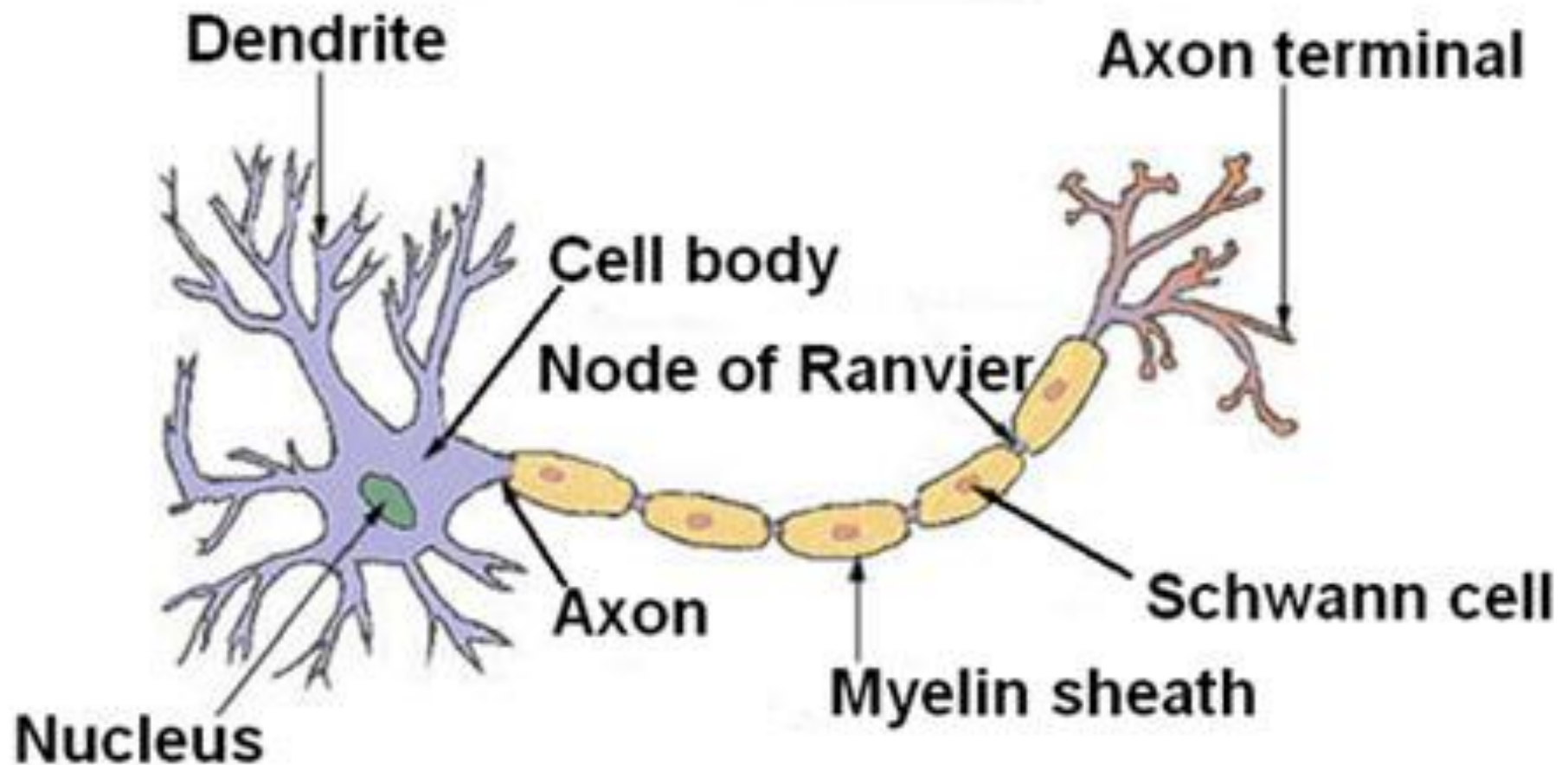
Anatomy of the Brain



The brain . . .

- is a soft organ, like the consistency of gelatin
which is made up of billions of neurons, or nerve cells.
- weighs less than *1* lb. at birth and grows to about *3* lbs.
- sits inside a rough and bony skull and is bathed in a *cerebrospinal fluid* (CSF)
- receives oxygen and glucose through a sophisticated system of blood vessels that carry blood to and from the heart
- communicates with through a combined neurochemical and electrical process (neurotransmitters and electrical impulses)

Structure of a Typical Neuron



Brain Injury Classifications

Mild - (includes concussion)

0-30 minute Loss of Consciousness (LOC); GCS 13-15; PTA 0-1 Day

May show confusion, dizziness, nausea, headache

Moderate

30 minutes to 6 hours LOC ; GCS 9-12; PTA >1 and <7 Days

Neurological signs of brain injury (e.g. skull fracture, hemorrhage, swelling)

May show up on CT scan, EEG, etc.

Severe

LOC over 6 hours; GCS 3-8 PTA > 7 Days

Marked impairment/injury to the brain.

Identifiable on brain scans

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

Parietal Lobe

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

Occipital Lobe

Occipital Lobe

- Vision

Cerebellum

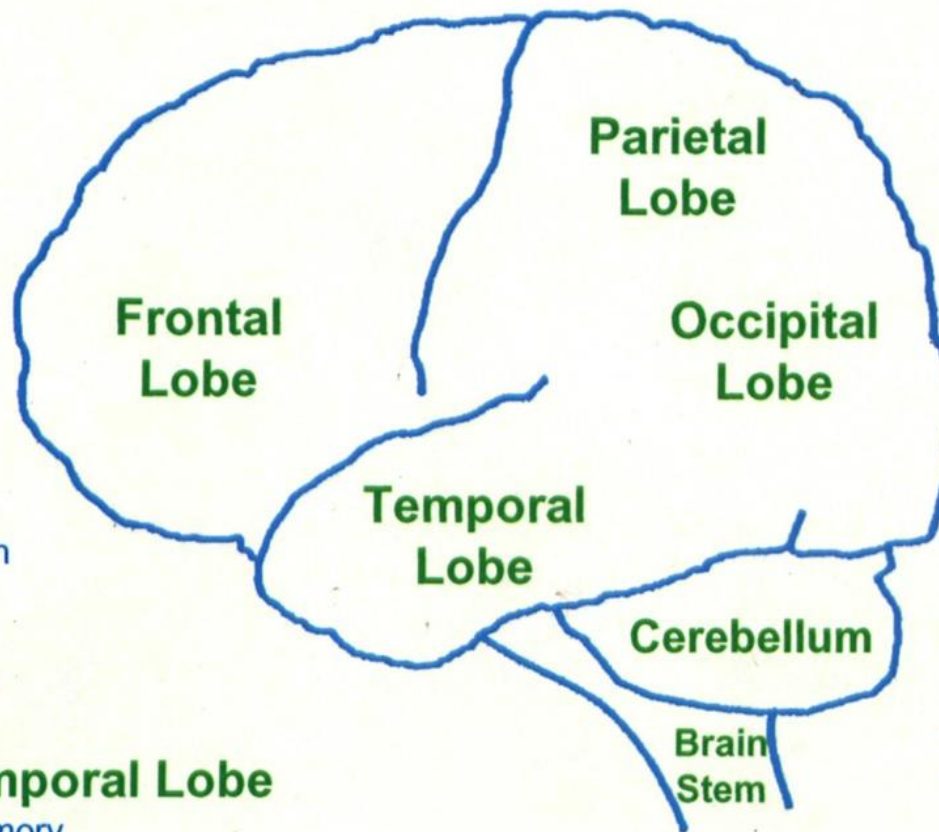
Cerebellum

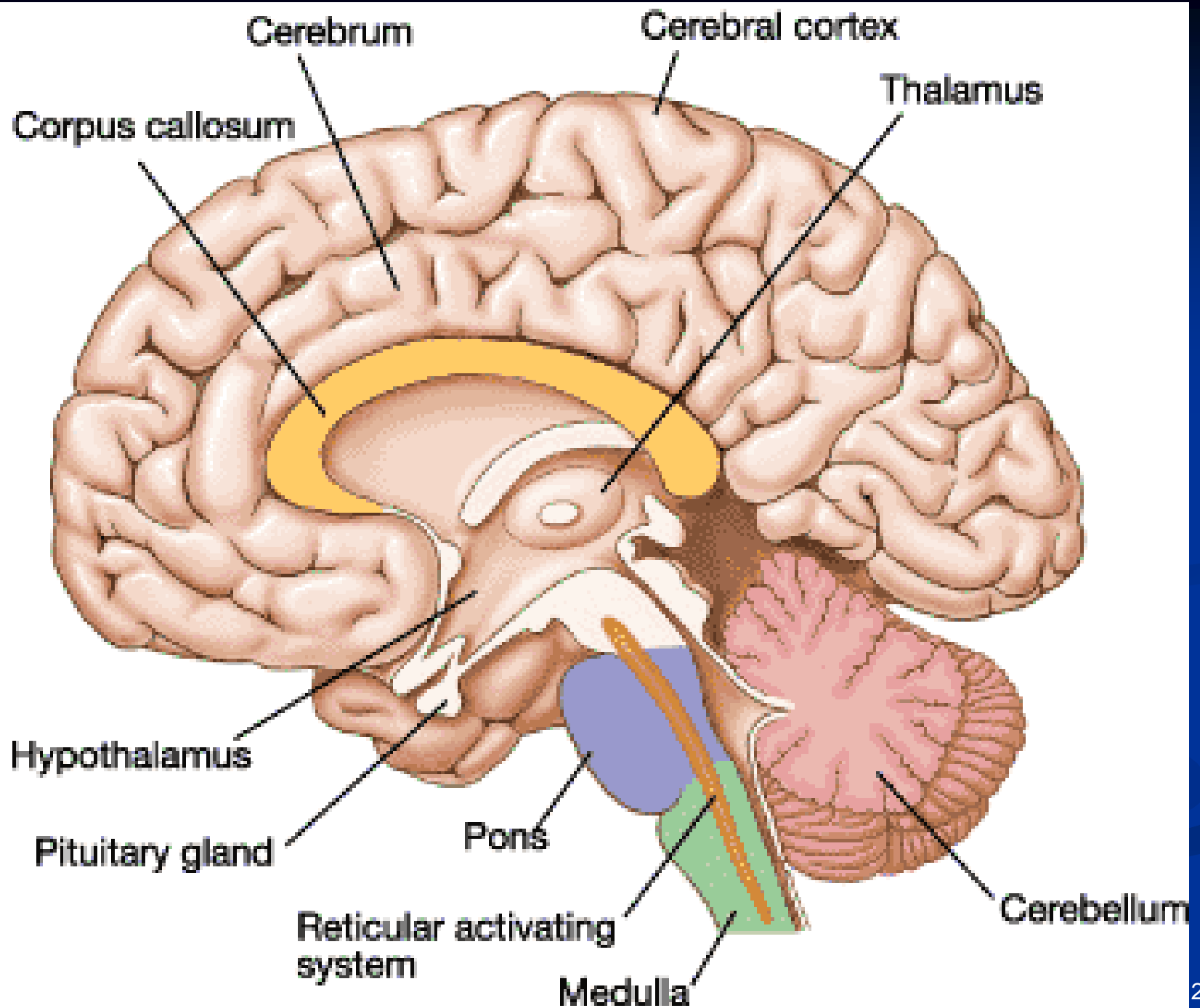
- Balance
- Coordination
- Skilled motor activity

Brain Stem

Brain Stem

- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration





Consequences of brain injury

Changes in brain function can be temporary or permanent. They may cause impairment or a complete inability to perform a function. This can result in:

- **Cognitive (Thinking) Changes**
- **Physical Changes**
- **Personality/Emotional/Behavioral Changes**

Cognitive Dysfunction

Cognitive Dysfunction

- **Insight** Poor judgment in social situations, develop of unrealistic goals; Decreased ability to predict consequences; Lack of awareness of deficits (Anosognosia)
- **Attention/Concentration** (Tendency to drift off topic; Decreased awareness of other people's nonverbal and verbal reactions; Decreased listening ability, externally distracted; Poor eye contact; Makes statements inappropriate to the situation; Decreased ability to shift attention from one topic to the next; Selective attention.
- **Memory** - Inability to accurately recall previous interactions with others, resulting in discontinuity of social relationships; Decreased recall of names, faces, conversations; Difficulty keeping track of conversations, perseveration.

Cognitive Dysfunction (cont.)

- **Organization** (Decreased ability to maintain proper perspective on events; Decreased ability to express thoughts, feelings, and ideas in an organized way; Decreased ability to differentiate what is significant in social situations).
- **Judgement**
 - Unable to manage emergency situations
- **Information Processing**
 - Understanding Information being received is decreased. Formulating a reply is cognitively taxing and requires a great deal of mental strength and effort.

Physical Dysfunction

Physical Dysfunction

■ Mobility

- Poor Gait, Loss of Balance, Diminished Stamina

■ Visual

- Field of Vision loss, Diplopia (double vision), Nystagmus (uncontrolled eye movement), Photophobia, Cortical Blindness

■ Auditory

- Tinnitus, Receptive Aphasia, Cortical Deafness, Hyperacusis (sensitivity)

Physical Dysfunction (cont.)

■ Speech Difficulties

- Expressive Aphasia (Word salad), Dysarthria (difficulty articulating), Dysphagia (swallowing difficulties)

■ Seizure Activity

- Tonic-Clonic (Grand-Mal), Absence, Focal vs. Generalized, Motor vs. Non-motor, etc.

Physical Dysfunction (cont.)

- Other physical deficits common to brain injury include:
 - Chronic pain
 - Hemiparesis/Hemiplegia
 - Spasticity, Contractures
 - Bowel and Bladder
 - Eating and Swallowing (Dysarthria, Aphasia, Dysphagia)
 - Ataxia (loss of control)
 - Decreased Coordination
 - Sensory Loss

Behavioral/Emotional Dysfunction

Emotional/Behavioral Dysfunction

- Emotional control and mood swings (Labile)
- Appropriateness of behavior
- Reduced self-esteem
- Depression
- Anxiety
- Frustration
- Stress
- Denial
- Self-centeredness
- Anger
- Coping skills
- Self-monitoring remarks or actions (sexual, racial, etc.)
- Motivation
- Irritability or agitation
- Excessive laughing or crying
- Self-medicating (drugs, alcohol)

Emotional/Behavioral Dysfunction

- Arguments with staff, neighbors, strangers, etc.
- Aggression (Destruction of property, Assault)
- Stealing
- Sexually/Racially Inappropriate
- Frequent Hospitalizations
- Legal/Criminal Involvement

Accommodations for Individuals with Brain Injury

Challenges	Suggested Accommodations
Problems with Attention	<input type="checkbox"/> Work only on one task at a time. <input type="checkbox"/> Have client participate in discussion and development of plan. <input type="checkbox"/> Limit distractions (both visual and verbal). <input type="checkbox"/> Meet in a quiet environment
Problems with Processing Information Quickly	<input type="checkbox"/> Allow additional time to answer questions. <input type="checkbox"/> Speak slowly, making sure client understands. <input type="checkbox"/> Offer assistance with completing written forms. <input type="checkbox"/> Allow additional time to complete forms.
Problems with Memory	<input type="checkbox"/> Provide written documentation, when possible, to supplement verbal discussion. <input type="checkbox"/> Present new information in small, concise chunks. <input type="checkbox"/> Encourage client to write down instructions/information in one notebook. <input type="checkbox"/> Check client's understanding by asking for a restatement of information provided. <input type="checkbox"/> Provide cues to help client recall information. <input type="checkbox"/> Do not assume he/she will remember information you provided in earlier meetings. Review previous goals/meetings. Inconsistency is a hallmark of brain injury. <input type="checkbox"/> In addition to the client using a calendar, provide reminder phone calls for appointments.
Problems with Planning, Organizing and Self-Control	<input type="checkbox"/> Present information in a factual manner, avoiding abstract concepts where possible. <input type="checkbox"/> Provide a few solutions to a problem and encourage client to make the best choice. Engage in problem solving. "What would happen if...?" <input type="checkbox"/> Provide written direction that summarizes steps to be followed in the plan.
Problems with Communication	<input type="checkbox"/> Limit use of open-ended questions. Use yes/no format, structured, or multiple choice where possible. <input type="checkbox"/> If client wanders off topic, redirect to topic at hand. <input type="checkbox"/> Cue client with beginning sounds of words if client has word-finding difficulties.
Emotional Challenges	<input type="checkbox"/> Don't interpret a lack of emotion as a sign of lack of interest. <input type="checkbox"/> Minimize anxiety with reassurance, education, and structure. <input type="checkbox"/> Provide neutral, but direct, feedback if client behaves inappropriately. <input type="checkbox"/> Suggest breaks or other activities if client becomes irritable or agitated. <input type="checkbox"/> Don't interpret poor follow-through or forgetfulness as resistance.

This was adapted from the Alabama Head Injury Foundation Information Sheet.

Brain Injury and Mental Health

Correlational Relationship

- TBI can cause or exacerbate preexisting mental health problems
- Individuals with Mental Health issues have higher rates of TBI
- .
- Misdiagnosis – Symptoms of TBI often mimic those of Mental Illness. Clinicians must investigate both Neurological as well as Psychogenic causes

Common Diagnoses

■ Mood Disorders

- Major Depressive D/O
- Dysthymia
- Bipolar D/O

■ Anxiety Disorders

- Generalized Anxiety
- OCD
- PTSD
- Panic

■ Psychotic Disorders

- Schizophrenia
- Schizoaffective
- Psychotic Disorder Due to Another Medical Condition

■ Personality Disorders

- Paranoid
- Borderline Personality
- Schizotypal

Proper Diagnosis is Key

Neurological vs. Psychogenic

- Neurological – Direct damage to the brain
 - Endocrine system, prefrontal cortex, axonal damage, etc.
- Psychogenic – Reaction to affects of BI injury
 - Loss of independence, mobility, income, family, etc.

****** Misdiagnosis can lead to inappropriate/ineffective treatment. Negative outcomes, exacerbating the problems

Misdiagnosis is Common

- Sadness, apathy, lethargy = Depression
- Emotional lability = Bipolar
- Behavioral Disregulation = Oppositional Defiant
- Fear and Distrust = Anxiety
- Denial of Reality = Psychotic

Children are Highly susceptible to Misdiagnosis

- Age of injury is critical in accurate diagnosis
 - Childhood injuries are especially complicated due to Interaction between brain dysfunction and ongoing developmental processes.
 - Children with ADHD and Behavioral disorders are more prone to TBI
 - Children most commonly experience mood disorders (depression, anxiety) secondary ADHD, oppositional defiant disorder and mania/hypomania

Diagnostic Considerations

- Personal History (Pre-existing Dx?)
- Family History
- Age of Onset
- Age of Injury (During a Developmental Stage?)
- Type of Injury (Area of Brain affected)
- Individual Perceptions vs. Observable Testing

Treatment

■ Treatment must be Individualized

- Based on all available information and testing
 - Mental Status Exam
 - Biopsychosocial Assessment
 - Psychological Evaluation
 - Neuropsychological Evaluation
 - MRI, CT Scans, EEG
 - Other Evals can include:
 - Neurological, Occupational, Physical, Neuro-opthamological,

Treatment Modalities

■ Evidence Based

- Cognitive Behavioral Therapy (Modified)
 - EMDR
 - Problem Solving Therapy
 - Environmental Modifications
-
- Psychopharmacological Treatment
 - Individuals with TBI may have increased sensitivity.
 - Medications may have a paradoxical affect (Benzos)

Treatment Considerations

- Treatment must be integrated and carry over into the community setting.
- Treatment must be consistent through all domains
- Staff must be cross-trained in Brain Injury and Mental Illness

Brain Injury and Substance Use/Misuse

Correlation Between Drug and Alcohol Use and TBI

- 37 – 51 % alcohol at time of injury

TBI Model Systems Database Reports:

- 43% reported hx. of alcohol misuse prior to TBI
- 29% illicit drug use prior to TBI

Post TBI

- Significant risk for using/misusing drugs and alcohol. “10x’s more likely,” BIAA
- The risk of substance use/misuse actually increases after a few years
- Why return to drug and alcohol use?
 - Old habits
 - Self medication
 - Return to normalcy (fit in)
 - Cognitive issues including: denial of deficits; poor judgment; decreased impulse control; increased affect on injured brain;

For Additional Research Information

- John Corrigan, Ph.D., ABPP

Emeritus Professor, Department of Physical
Medicine and Rehabilitation Director, Ohio Valley
Center for Brain Injury Prevention and
Rehabilitation

Treatment for ABI and Substance Misuse

- Treatment must be individualized
 - Take into account:
 - Processing speed, Pragmatics, concrete thoughts, poor concentration, impulsivity, lack of insight, poor memory. inability to see one's own deficits
- Treatment must be integrated and carry over into the community setting.
- Treatment must be consistent through all domains
- Staff should be cross-trained in BI and MI

Treatment for ABI and Substance Misuse

- Cognitive Behavioral Therapy (CBT) – Must have insight into thoughts, feelings and emotions.
- Modified AA/NA programs
 - Small groups, simplified language, frequent breaks, visual cues, clear guidelines and expectations
- Individual Therapy is optimal
- Quadrant Model (Ohio Valley Center for Brain Prevention and Rehabilitation)

Barriers to Treatment

- SA/MH facilities won't treat individuals with BI
 - Too disruptive to the milieu
 - Staff lack of understanding and training on complex issues related to co-occurring disabilities
 - Treatment duration too brief
 - Unable to create unique/individualized treatment plans required to meet the needs of clients with BI
 - Cannot carry over treatment into the community setting

Leads to less positive outcomes, higher recidivism

Key Take Aways

- Every Brain injury is Unique. Treatment must be individualized
- Must get a comprehensive hx. which includes a screening for BI.
- Neuropsychological Evaluation is highly recommended
- Staff should be cross-trained in ABI basics at the very least.

Key Take Aways

- Treatment must be Flexible and must be integrated into the Community Setting
- Treatment must occur in the least restrictive environment

- Must be a Collaborative - Team Approach

Neurologist, Neuropsychologist, Psychiatrist, OT, PT, Neuro-Ophthalmologist, Physiatrist, Social Worker, Mental Health Counselor, Direct Care, Alcohol/Drug Counselor, PHP, Nursing, Family and Friends... and so many more!

Last Minute Suggestions...

- Put in the time upfront. Meet with client and understand his/her needs and desires.
 - Do Not Assume!
 - Get a comprehensive evaluation including hx., medical records, current assessments. ** Neuropsych if possible
- Effective Communication
 - Verbal, written, multimodality, repeat, summarize
- Current Support Systems? What's Available
 - Federal/State Services? Waiver Services? MFP? Section 8?
 - Natural Supports?

Last Minute Suggestions...

- Stay Positive.
 - Every moment is a teaching/learning opportunity
 - It's not personal
- Have Patience
 - What may seem lazy or unmotivated may be organically based
 - Denial may a lack of self-awareness
- Have Empathy
 - Loss of abilities, job, income, home, independence, family, and friends, privacy, purpose, identity, self-worth
 - Burden to others

Last Minute Suggestions...

- Read the Records!
- Effective Communication
 - Verbal, written, multimodality, repeat, summarize
- Current Support Systems? What's Available
 - Federal/State Services? Waiver Services? MFP? Section 8?
 - Natural Supports?

Resources

■ Brain Injury Alliance of CT. – BIACT

- Resource Center for Individuals with Brain Injury
 - Awareness; Education; Resources; Advocacy; Supports
 - Available for limited Individual Consultation

BIACT Website: BIACT.org

860-219-0291

800-278-8242 (Toll Free Helpline)

Resources

■ Disability Rights CT (Formerly The Office of Protection and Advocacy)

Receives grant funds specifically designated for the Brain Injury Population

- Housing, Special Education; Physical Accessibility; Transportation; Handicap Parking

846 Wethersfield Avenue

Hartford, CT 06114

(800) 842 -7303 (toll-free in CT)

(860) 297-4300 (local)

Resources

■ DMHAS ABI Services

Services Provided:

- Comprehensive Consultations
- Training and Education
- Advocacy Supports
- Liaison Supports to LMHA; DSS ABI Waiver; DMHAS MH Waiver; CVH ABI Inpatient Unit, Community Providers; etc.

** If Eligible

- ABI Substance Abuse Services
- Occupational Therapy Evaluations
- Community Living Support Subsidies

DMHAS ABI Services

Office of the Commissioner

Phone # (860) 262-6725