THE TRAUMATIC BRAIN INJURY AND CHEMICAL DEPENDENCY CONNECTION

ADDICTION MEDICINE EDUCATIONAL SERIES
WORKBOOK

NEW YORK STATE
OFFICE OF ALCOHOLISM & SUBSTANCE ABUSE SERVICES
Addiction Services for Prevention, Treatment, Recovery

THE TRAUMATIC BRAIN INJURY AND CHEMICAL DEPENDENCY CONNECTION

STEVEN KIPNIS, MD, FACP, FASAM
OASAS MEDICAL DIRECTOR

MARYANN Y. FOSTER, LCSW-R
ELISE GROSSMAN, MA CRC
SHELLY LEVY, PSY.D
EDWARD ROSS, LCSW-R
ICD-INTERNATIONAL CENTER FOR THE DISABLED

ROBERT KILLAR, CASAC
DIRECTOR
OASAS COUNSELOR ASSISTANCE PROGRAM

PATRICIA LINCOURT LCSW
OASAS BUREAU OF TREATMENT

CHRISTINE SUTTER CASAC
STEPHEN OSWALD CASAC
TBI Specialists@ BLAISDELL ADDICTION TREATMENT CENTER

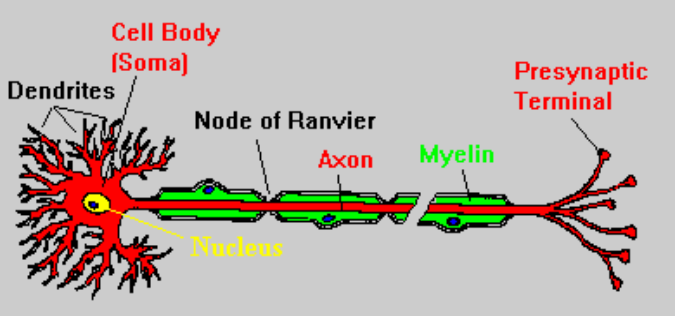
THE HEALTHY BRAIN

- The brain can be considered the computer of the human body. It is enclosed inside the bony skull, which acts as a protective covering. On the inside of the body, it is protected by the blood-brain barrier, a protective barrier that keeps out toxic substances and allows fat (lipid) soluble substances through.

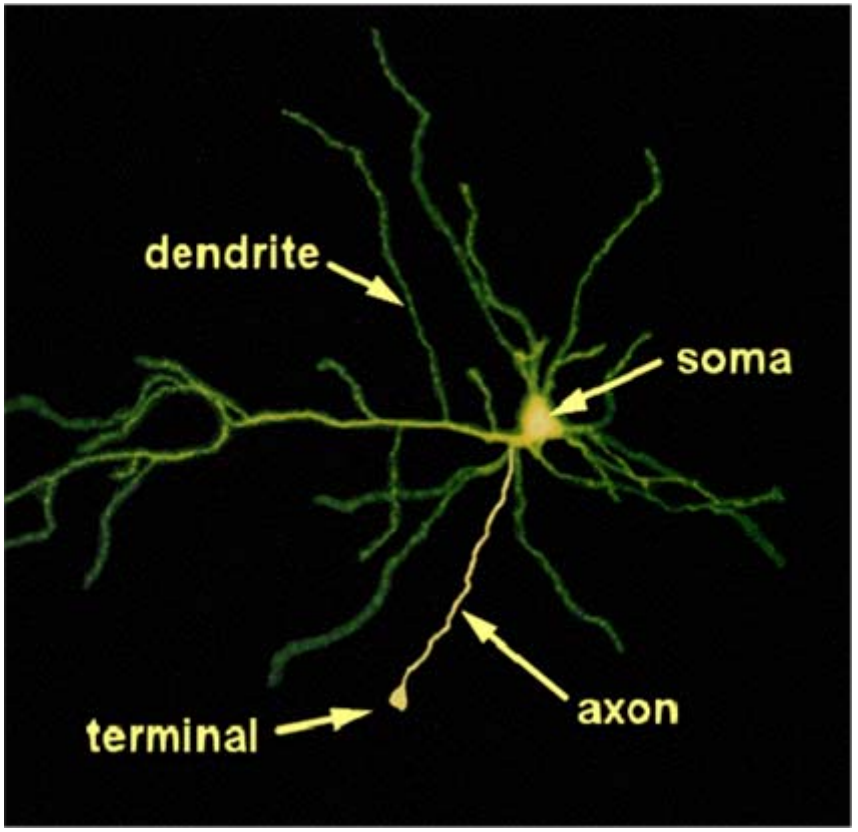
THE HEALTHY BRAIN

- The basic functional unit of the brain is the neuron, a cell that is specialized to send information. The brain uses these neurons to communicate with other parts of the brain, the spinal cord and ultimately with the rest of the body. Movement, cognition and emotional expression are just some of the functions. There are 100 billion of these in the normal brain. The parts of the neuron are:
  - Cell body
    - Maintenance of cell life
      - Nutrition, waste removal, manufacturing of chemicals
  - Dendrite
    - Receive information from other cells or stimuli
    - Up to 10,000 in one cell
  - Axon
    - Main pathway to other cells
    - Usually one main axon
  - Myelin
    - Protective wrapping around cells
    - Speeds nerve impulses

THE HEALTHY BRAIN

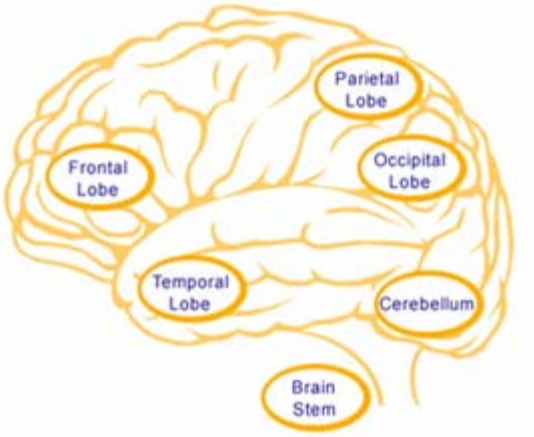


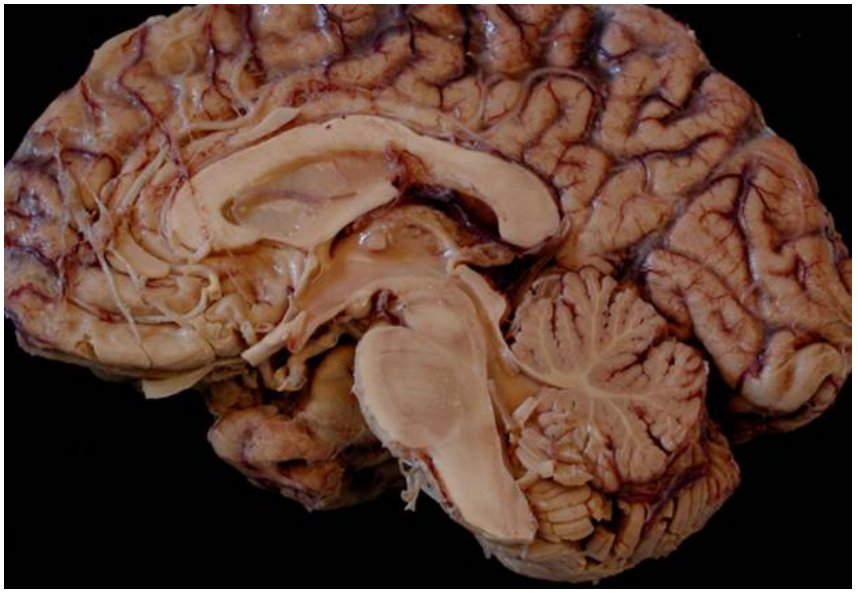
Drawing of a neuron



THE BRAIN IS DIVIDED INTO LOBES, THE CEREBELLUM AND THE BRAIN STEM

- Frontal Lobe
- Temporal Lobe
- Parietal Lobe
- Occipital Lobe
- Cerebellum
- Brain Stem





THE HEALTHY BRAIN

- The Frontal Lobe is involved in the following functions:
  - Initiation
  - Problem solving
  - Judgment
  - Inhibition of behavior
  - Planning and anticipation
  - Self – monitoring
  - Motor planning
  - Personality
  - Emotions
  - Awareness of abilities and limitations
  - Organization
  - Attention and concentration
  - Mental flexibility
  - Speaking (expressive language)

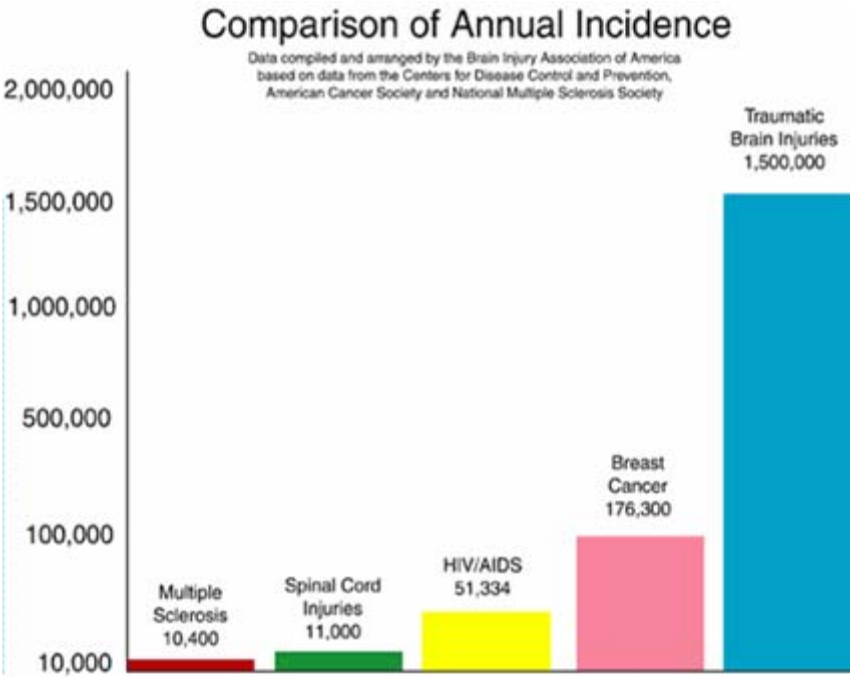
THE HEALTHY BRAIN

- Temporal Lobe functions:
  - Memory
  - Hearing
  - Understanding language
  - Organization
  - Sequencing
- Parietal Lobe functions:
  - Sense of touch
  - Differentiation of size, shapes, and colors
  - Spatial perception
  - Visual perception

THE HEALTHY BRAIN

- Occipital Lobe functions:
  - Vision
- Cerebellum functions:
  - Balance
  - Coordination
  - Skilled motor ability
- Brain Stem functions
  - Breathing rate
  - Heart rate
  - Arousal and consciousness
  - Sleep and wake cycles
  - Attention and concentration

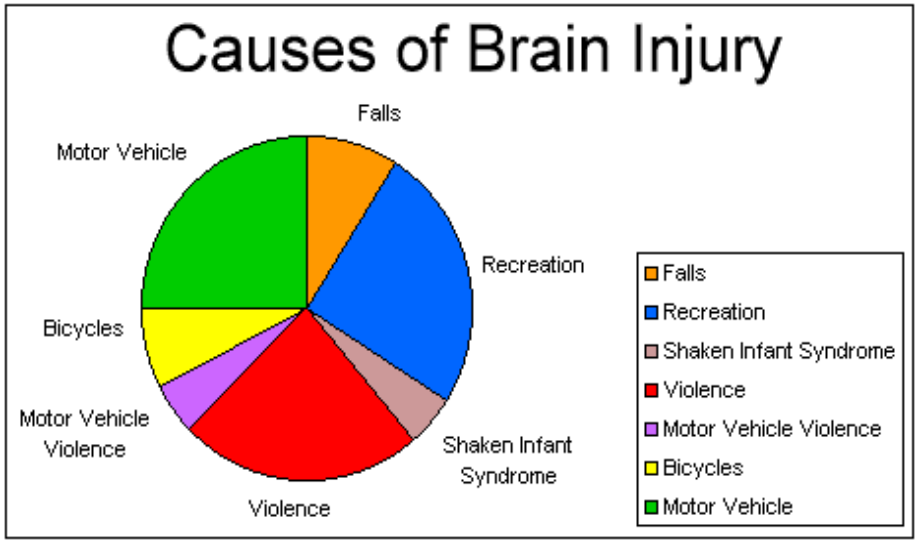
- Each year in America, one million people are seen by medical doctors due to a blow to the head. Of that number, 50,000 to 100,000 have prolonged problems that will affect their ability to work and/or affect their daily lives.



Data compile and arranged by the Brain Injury Association of America based on date from the Centers for Disease Control and Prevention, American Cancer Society and National Multiple Sclerosis Society.

Every 21 Seconds One Person
In The U.S. Sustains A Brain Injury

Source: Brain Injury Association of New York State www.bianys.org



- The majority of people are injured in car accidents.
  - It is important to note that you do not have to be traveling at a high rate of speed to get a head injury.
  - Nor do you have to hit your head on an object (steering wheel, windshield) to injure the brain. Even at moderate rates of speed, traumatic brain injuries can and do occur

TRAUMATIC BRAIN INJURY (TBI)

- TRAUMATIC BRAIN INJURY (TBI) is an insult to the brain, not of a degenerative or congenital nature but 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. These impairments may be either temporary or permanent and cause partial or total functional disability or psychosocial maladjustment.

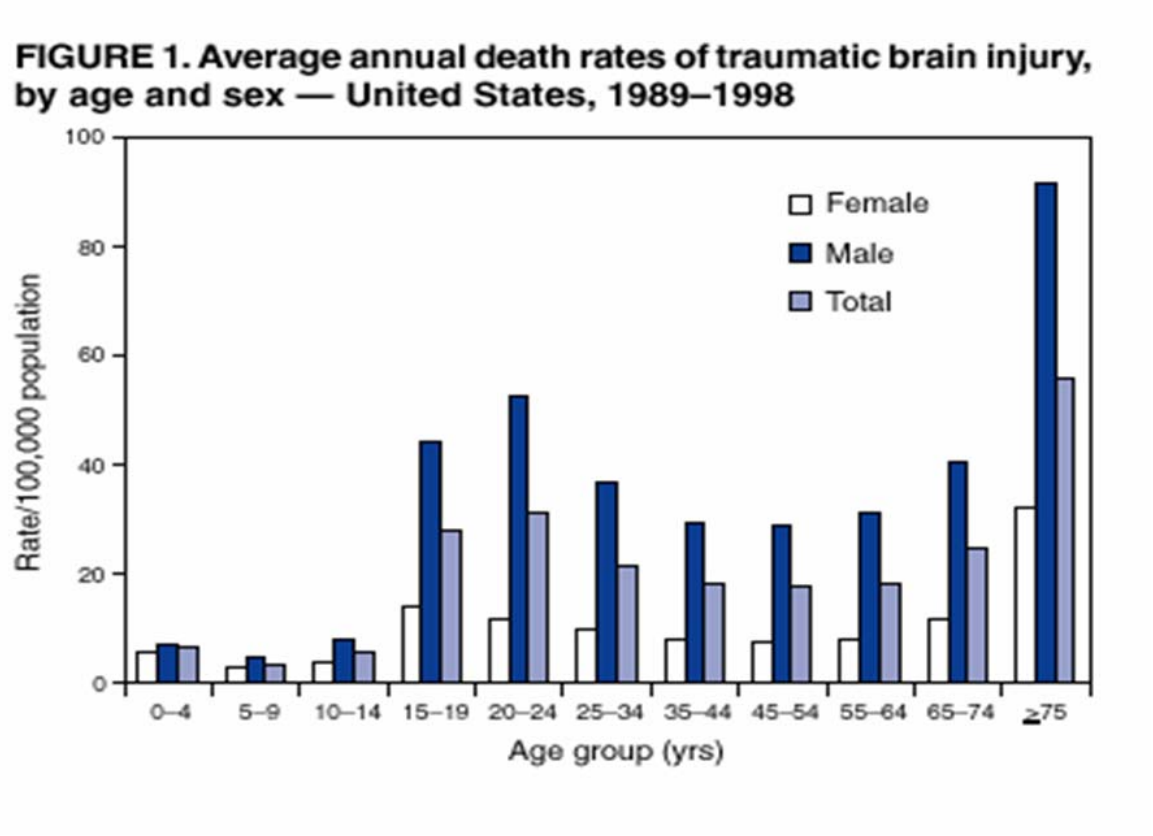
*Brain Injury Association, 1986

ACQUIRED BRAIN INJURY (ABI)

- The term Acquired Brain Injury refers to TBI, as well as other types of brain injuries occurring after birth, such as stroke, near suffocation, infections in the brain, anoxia. TBI/ABI is not due to an inherited, degenerative or congenital problem.
- The effects of a brain injury depend on the cause, the location of the injury and the severity of the injury.
- Brain injury is an invisible disability.

TRAUMATIC BRAIN INJURY

Traumatic brain injury can cause death.

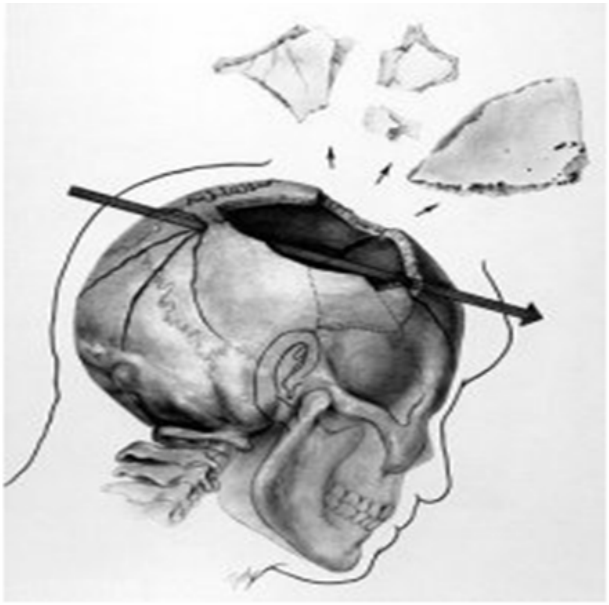


ACQUIRED BRAIN INJURY

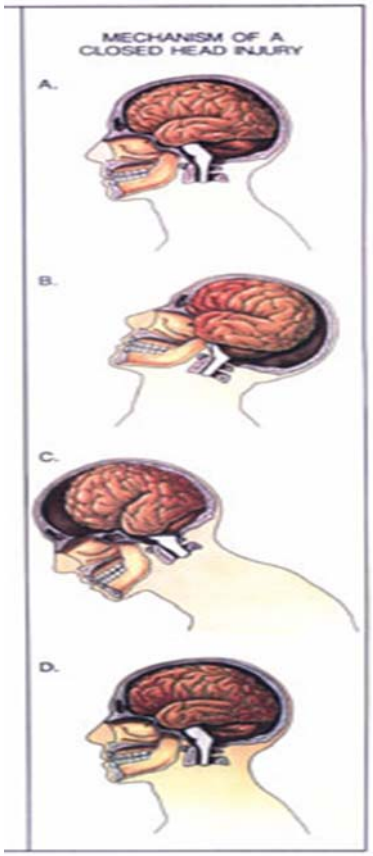
- Acquired brain injury can be due to trauma, such as an open or closed trauma, or due to infections, medical problems such as stroke or substance effects.
  - Brain tumor
  - Meningitis
  - Seizure disorder
  - Hepatic encephalopathy (seen in liver failure)
  - Heart attack
  - Anoxia
    - Near – drowning
    - Choking
    - Strangulation
  - Electrical shock
  - Lightening strike
  - Exposure to toxins or chemicals
  - CVA/Stroke
  - Aneurysm
  - Alcohol and drugs

TRAUMATIC BRAIN INJURIES: OPEN AND CLOSED BRAIN INJURY

Open



Closed



MAY NOT BE AS APPARENT AS AN OPEN INJURY

LEVELS OF BRAIN INJURY

- Mild TBI
  - Loss of consciousness is very brief, usually a few seconds or minutes
  - Loss of consciousness does not have to occur – the person may be dazed or confused
  - Testing and scans of the brain may appear normal
  - Most common: 75%-85% of all brain injuries are mild
  - 90% of individuals recover within 6-8 weeks, often within hours or days, but 10% experience deficits, which may not be evident immediately
  - More than one mild brain injury over time (e.g., sports injuries or domestic violence) increases the chance of deficits

LEVELS OF BRAIN INJURY

- Moderate TBI
  - Loss of consciousness lasts from a few minutes to a few hours
  - Confusion lasts from days to weeks
  - Physical, cognitive, and/or behavioral impairments last for months or are permanent
  - EEG/CAT/MRI are positive for brain injury

LEVELS OF BRAIN INJURY

- Severe TBI
  - Prolonged unconscious state or coma lasts days, weeks, or months
  - Categories include:
    - Coma
    - Vegetative State
    - Persistent Vegetative State
    - Minimally Responsive State
    - Locked-in Syndrome

LEVELS OF BRAIN INJURY

- Severe TBI Categories
  - Coma
    - Unconscious state from which the individual cannot be awakened with minimal or no meaningful response to stimuli
  - Vegetative State
    - Arousal is present but cannot interact with environment
    - Eye opening can be spontaneous or in response to stimulation
  - Persistent Vegetative State
    - Vegetative state lasting for more than one month
  - Minimally Responsive State
    - No longer in coma or vegetative state with primitive reflexes and inconsistent ability to follow simple commands, though an awareness of the environment
  - Locked – in Syndrome
    - Rare neurologic condition in which a person cannot physically move any part of the body except the eyes. The person is conscious and able to think.

GLASGOW COMA SCALE

The Glasgow Coma scale provides an objective way to evaluate a patient's level of consciousness and to detect changes from baseline functioning.

Eye Opening	**E**
Spontaneous	4
To speech	3
To pain	2
No response	1
Best Motor Response	**M**
To verbal command: Obeys	6
To painful stimuli:	
Localizes pain	5
Flexion-withdrawal	4
Flexion – abnormal movement	3
Extension of extremity	2
No response	1
Best Verbal Response	**V**
Oriented and converses	5
Disoriented and converses	4
Inappropriate words	3
Incomprehensible sounds	2
No response	1
E + M + V = 3 to 15 --- Greater than or equal to 9 is not in coma. Less than or equal to 8 at 6 hours after injury = 50% die. 9 to 11 is a moderate severity and greater or equal to 12 is equal to a minor injury.	

AN INJURED BRAIN

- Changes are noted to thought processes:
  - Memory
  - Decision making
  - Planning
  - Sequencing
  - Judgment
  - Attention
  - Communication
  - Reading and writing skills
  - Thought processing speed
  - Problem solving skills
  - Organization
  - Self – perception
  - Perception
  - Thought flexibility
  - Safety awareness
  - New learning

AN INJURED BRAIN

- Physical Changes are seen:
  - Muscle movement
  - Muscle coordination
  - Sleep
  - Hearing
  - Vision
  - Taste
  - Smell
  - Touch
  - Fatigue
  - Weakness
  - Balance
  - Speech
  - Seizures
  - Sexual functioning

AN INJURED BRAIN

- Personality and Behavioral Changes
  - Social skills
  - Emotional control and mood swings
  - Appropriateness of behavior
  - Reduced self-esteem
  - Depression
  - Anxiety
  - Frustration
  - Stress
  - Reduced Self Awareness (often misunderstood as denial)
  - Self-centeredness
  - Anger management
  - Coping skills
  - Self-monitoring remarks or actions
  - Motivation
  - Irritability or agitation
  - Excessive laughing or crying

AN INJURED BRAIN

- Right sided injuries
  - Visual-spatial impairment
  - Visual memory deficits
  - Decreased awareness of deficits
  - Altered creativity and music perception
  - Loss of “the big picture” type of thinking
  - Decreased control over left – sided body movements
- Left sided injuries
  - Difficulties in understanding language (receptive language)
  - Difficulties in speaking or verbal output (expressive language)
  - Depression
  - Anxiety
  - Verbal memory deficits
  - Impaired logic
  - Sequencing difficulties
  - Decreased control over right – sided body movements

ACQUIRED BRAIN INJURY

- Alcohol and drugs can cause brain injury directly or indirectly. Alcohol is a neurotoxin, though its effect and extent of damage depends on the amount of alcohol consumption, the age and sex of the consumer, genetic vulnerability and other factors.
- Binge drinkers may be less prone to alcohol related cognitive deficits than heavy daily users, though they are still vulnerable to alcohol intoxication related events.

ACQUIRED BRAIN INJURY

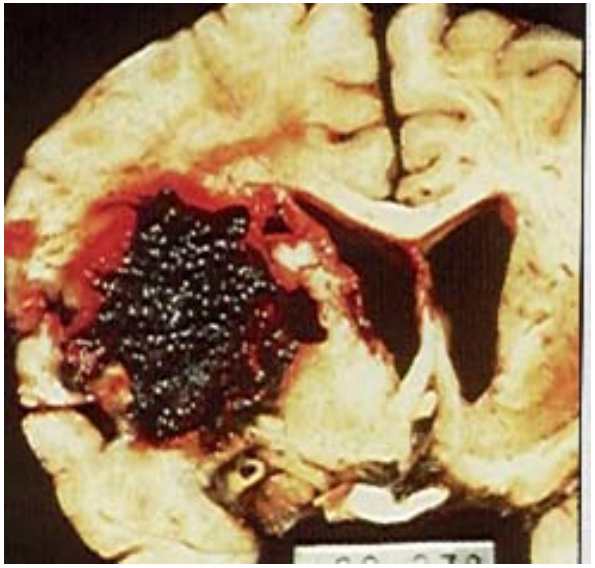
- Alcohol can cause
  - Direct brain damage (alcohol dementia, Wernicke – Korsakoff's Syndrome, and atrophy of the cerebrum and cerebellum.
    - There can be some improvement in deficits with abstinence
  - Indirect damage can be associated with
    - Falls and accidents
    - Intracerebral bleeds due to alcohol effect on platelets and blood pressure
    - Hepatic encephalopathy due to alcohols effect on the liver

ACQUIRED BRAIN INJURY

- Solvents such as glue can lead to ataxia (impaired gait) and cognitive problems. Metabolic syndromes can also be seen especially with inhalation of substances that effect the kidney.
- Cannabis dependence is associated with impaired attention, concentration and motivation

ACQUIRED BRAIN INJURY

- Stimulant use can be associated with strokes (as seen here), seizures and long – term memory and concentration problems.



ACQUIRED BRAIN INJURY

- Sedative effects are not well studied in the long term, though overdose can lead to respiratory compromise and oxygen deprivation.
- Oxygen deprivation can also be seen in opiate overdose as pictured here, where the overdose victim developed noncardiogenic pulmonary edema* and intubation and respirator care was needed.

* NONCARDIOGENIC PULMONARY EDEMA – A
Condition whereby the lungs fill up with fluid (PULMONARY EDEMA) but the cause is not heart failure (CARDIOGENIC) in origin, the usual cause of PULMONARY EDEMA is congestive heart failure, where the heart is not pumping properly and the blood backs up into the lungs.

- The CDC estimated that 5.3 million Americans live with disabilities due to brain injury and that 67% of people in rehabilitation for brain injury have a previous history of substance abuse (Thurman, 1998). 50% of these people will return to using alcohol and drugs after the injury (Corrigan, 1995).

- 20% of persons with brain injuries who did not use alcohol or drugs prior to the injury, were vulnerable to alcohol and drug use after the injury (Corrigan, 1995).
- 50% of clients enrolled in OASAS Programs were affected by probable TBI (N=647) (Fenske, Gordon, Perez, Hibbard, Brandau, submitted for publication).

ASSESSMENT OF THE TBI PATIENT SHOULD INCLUDE:

- Biopsychosocial as the standard in chemical dependence treatment
- Screening tool
- Cognitive assessment
- Emotional assessment
- Physical assessment
- Description of injury/illness/etc
- Concrete needs assessment
- Review of medical/neurological records

ASSESSMENT

- Screening Tool: ***ICD* HELPS**

H Did you ever HIT your head? Were you ever HIT on the head?

E Were you ever seen in an EMERGENCY room, by a doctor or hospitalized? For what reason?

L Did you ever LOSE consciousness? For how long? For what reason?

P Did you have any PROBLEMS after you were hit on the head? Headache? Dizziness? Anxiety? Depression? Difficulty concentrating? Difficulty Remembering? Difficulty reading, writing or calculating? Difficulty performing your old job at work? Difficulty with school work? Poor judgment? Poor problem solving?

S Any other SIGNIFICANT SICKNESS? Look for hospitalizations for brain cancer, meningitis, stroke, heart attack, diabetes. Screen for domestic violence and child abuse

ICD-International Center for the Disabled: Picard, Scarisbick, Paluck, 1993

ASSESSMENT

- ICD Cognitive assessment
  - Does patient have problems with memory
    - Difficulty managing day-to-day tasks?
    - Does patient forget appointments?
  - Does patient have difficulty paying attention or concentrating on a task?
  - Does the patient get overwhelmed by too much information if given at once?
  - Is the patient able to understand what is said to him/her?
  - Do others tell him/her that they notice problems?
  - If the patient denies problems, ask if others tell him/her that they are observing problems

ICD-International Center for the Disabled, 2004

ASSESSMENT

- ICD Cognitive assessment
  - Some questions:
    - What is today's complete date?
    - Do you know what agency you are in?
    - Do you know who I am or why you are seeing me?
    - Do you have problems with memory?
    - Do you have problems remembering day – to – day tasks?
      - Do you have problems paying bills?
      - Do you have problems taking medications?
      - Do you have problems eating meals?
      - Do you forget to turn off the stove?
      - Do you use a date book or other techniques for remembering?

ICD-International Center for the Disabled, 2004

ASSESSMENT

- ICD Cognitive assessment
  - Some questions:
    - Is there someone who helps to remind you about appointments? Who ?
    - Do you have difficulties paying attention or concentrating on a task?
    - Do you have any difficulties with reading?
    - Do you get overwhelmed by too much information being given to you at one time?
    - Are you able to understand what is said to you?
    - Do you have difficulties at times finding the right words to say?
    - Do you have difficulties organizing you thoughts and communicating them?

ICD-International Center for the Disabled, 2004

ASSESSMENT

- Emotional assessment
  - Do you feel:
    - Depressed
    - Anxious
  - Do you have trouble sleeping?
  - Do you have loss of appetite?
  - Do you get frustrated easily?
  - Do you have difficulty controlling anger?
  - Do you often act without thinking?

ICD-International Center for the Disabled, 2004

ASSESSMENT

- Physical Assessment
  - Does the patient have left or right-sided weakness?
  - Does the patient have difficulties with balance?
  - Does the patient complain of frequent headaches?
  - Does the patient get fatigued easily?
  - Are there noticeable scars from trauma or operations?
  - Is the speech easily understood?

ICD-International Center for the Disabled, 2004

ASSESSMENT

- Description of injury/illness/etc
  - Date
  - Describe event with details of the trauma/illness, results of the trauma/illness, hospitalizations, rehabilitation treatments
  - Loss of consciousness?
    - Duration
    - Was coma initially present? How long did it last?
  - Did seizures occur after the incident?
    - Type of seizure
    - When did they start?
    - How often do they occur?
    - Date of last seizure?
    - Physician following the problem?
    - Medications being used?

ICD-International Center for the Disabled, 2004

ASSESSMENT

- Concrete Needs Assessment
  - Can you travel by public transportation?
    - If yes, do you need assistance with writing out the route to travel?
    - If no, do you need someone to go with you?
    - Do you need an ambulette?
  - Do you need assistance registering or checking in at appointments?

ICD-International Center for the Disabled, 2004

TREATMENT

- Challenge
  - Asking individuals to acknowledge and accept that they have a substance abuse problem at the same time that self-awareness is reduced due to a TBI.

TREATMENT

- It is important to adapt treatment techniques for people with TBI so that:
  - There is an increased opportunity for success
  - The patient can understand what is required by the program
  - The patient can act appropriately and understand behavior concerns
  - TBI education is as important as is the drug/alcohol education for this patient.
  - The treatment of both recovery and cognitive needs produces the best outcomes

TREATMENT

- Modify groups
  - Give a group orientation
    - Date
    - Purpose of group
    - Important announcements
  - Do not overwhelm
  - Rate of information is critical
    - Verbal and written with repetition is useful
    - Practice new skills
    - Role play
  - Be concise
  - Encourage note taking
  - Be aware of vocabulary problems, especially when using specialized or treatment language
    - Always define and give examples
  - Summarize statements to check patients' comprehension and identification of main points
  - Ask clients to present their own summary statements

TREATMENT

- Compensatory strategies
  - Date books and calendars to record appointments and daily schedule
  - Notebook to record important information and notes from groups and counseling sessions
  - Wristwatch alarms
  - Post – its
  - Visual cues (pictures, maps, diagrams)
  - Information, guidelines and expectations should be reviewed often and should be very specific
  - Offer immediate and specific feedback about behavior
    - Give concrete suggestions and examples

TREATMENT

- Importance of psychoeducation
  - Increased self-awareness
  - Peer support for adjustment to the disability

TREATMENT

- Education about TBI and specific issues related to substance abuse
  - Seizures are more likely
  - Dangers of mixing alcohol and drugs
  - Dangers of mixing above with prescription medications
  - Increased risk of additional brain injury
    - Chance of a second head injury is 3 times greater (Ohio Valley Center for Head Injury Prevention)
  - Interferes with TBI rehabilitation

SPECIFIC EXAMPLES OF PROGRAM AND SITE MODIFICATIONS

- Signs identifying:
  - Counselors offices
  - Group rooms
  - Bathrooms
- Directions (floor plans) displayed

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- Educate your non-TBI patients about TBI.
  - Many Non-TBI patients do not understand why TBI patients may need extra time or attention
    - Be careful to not violate individual patient confidentiality
    - Educate non-TBI patients about all the areas of life that can be affected by TBI (e.g. memory, concentration, reading, difficulty with instructions, mood swings, impulse control etc.)
    - Appeal to patients empathy. Ask them to imagine what it would be like if they woke up one day and a part of their brain no longer worked correctly. What kind of help would they need ?
    - Remind them of the need for individualized treatment – one size does not fit all

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- **What appears to be denial in TBI patients may be lack of self awareness caused by the brain injury**
  - TBI patients get lost sometimes – be understanding and helpful
  - TBI patients may need extra rest – this is not a manipulation to avoid treatment.
  - TBI is often a direct consequence of alcoholism/addiction – perhaps gratitude is possible if you have not experienced this consequence.

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- Group Issues that may need to be addressed
  - **Significant Grief/Loss:**
    - Loss of memory/skills/abilities
    - Loss of identity
    - Loss of power /control
    - Loss of anticipated future (dreams/career)
    - Relationship issues (possible loss of relationships)
    - Spiritual confusion/crisis
    - Isolation related to all of the above

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- Groups
  - Provide notebooks for taking notes during group
    - Will need to change group therapy rules to allow for note taking – not usually allowed in group setting
  - Experiential activities work well – allows for multiple pathways for processing information

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- Patient Review Instrument (PRI) is an assessment tool used to determine the appropriate level of care. A PRI assessment is very thorough and includes medical conditions, treatments and medications needed, special diets or therapies needed, physical and mental abilities and limitations, ability to perform acts of daily living such as eating, moving and toileting, and behaviors such as aggressiveness and disruptiveness.

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- Someone in your agency should be certified to do screenings and PRI's
    - If patient is going to a TBI residence, a social worker and a nurse must be involved in referral process. Only the nurse has to be certified re: PRI
- Treatment plans need to be individualized and simplified.
- Placement for discharge is very important
    - Be sure to have all plans/agreements in writing with referral source. TBI patients often need to return to referent if they are not able to be placed in aftercare in a timely fashion.

WORKING WITH TBI PATIENTS

- When a TBI patient wishes to leave treatment against clinical advice, if the patient is allowed to sit quietly and alone for several minutes*, with no outside distractions, they are better able to process their actions, and may change their request.
- Therapist may provide assistance by being a silent presence and/or offering non-confrontational feedback to support decision-making.

*Caution- risk of leaving unattended if self control issues are present

HELPFUL HINTS WHEN WORKING WITH TBI PATIENTS

- Flexibility
- Understanding (TBI educated)
- Patience
- Respect

IMPORTANT RESOURCE FOR YOU AND YOUR PATIENTS

Some patients with serious TBI who qualify for Medicaid are eligible for a **TBI Waiver** through the New York State Department of Health.

Traumatic Brain Injury Waiver

•An important component of a comprehensive strategy developed by the NYS Department of Health to prevent unnecessary entrances into nursing homes and to help individuals leave nursing homes to live in the community

•Provides 11 Medicaid-funded services (including substance abuse treatment) needed to assist participants to live in community-based settings and achieve maximum independence; services are used in combination with existing Medicaid services

•Participants may be eligible for rent subsidies and housing supports and limited one-time payment for furniture and household supplies.

•Each recipient must be given the choice of living in the community or in a nursing facility, and – if choosing the community – a living arrangement that can meet his or her needs.

CONTACT INFORMATION
DOH Bureau of Long Term Care Phone: 518-474-6580
DOH Website: www.nyhealth.gov

ADDITIONAL RESOURCE

The Brain Injury Association Of New York State (BIANYS)

The Brain Injury Association of New York State (BIANYS) is a statewide non-profit membership organization that advocates on behalf of individuals with brain injury and their families, and promotes prevention. BIANYS provides education, advocacy, and community support services that lead to improved outcomes for children and adults with brain injuries and their families. BIANYS also offers a toll free Family Help Line, chapters and support groups throughout the state, prevention programs, mentoring programs, speakers bureau, a video library and a publications library. BIANYS plays a central role in the development of public policy on the federal, state and local level.

CONTACT INFORMATION

Phone: (518) 459-7911 Website: www.bianys.org