http://www.youtube.com/watch?v=Ahg6qcoay4
Objectives

- Understand types of brain injuries and statistics regarding brain injury
- Learn about the functional issues related to brain injuries
- Learn about brain injury and homelessness
- Hear about the UMOM, BRAINS/Halle project
- Strategies for management
Brain Injuries: The Silent Epidemic
Every 23 seconds a brain injury occurs in the United States
Brain Injury Awareness

- Making brain injuries eight times more likely than breast cancer and 34 times more likely than HIV/AIDS.
TBI Comparison

Traumatic brain injury is now classified as a "public health epidemic" in America.
Data and Research
TBI Incidence & Prevalence - USA

- 1.7 million injured
- 50,000 die from a TBI
- 235,000 are hospitalized
- 1.1 million treated and released from ED
- 80,000 - 90,000 result in long-term disability
- 5.3 million with long-term, lifelong disability
- 6.5 million Americans living with some effect
Annual number of TBI’s in AZ

- 1,288 Deaths
- 6,943 Hospitalizations
- 43,369 Emergency Department Visits
- ??? Receiving Other Medical Care of No Care

Arizona Department of Health Services
TBI and Homelessness

- Given the growing evidence an underdiagnosis of crisis proportions may exist in the homeless population

Health Care for the homeless, June 2008
Clinicians Network
Homelessness and TBI-Research Review

- Wisconsin-In studying a cohort of 90 homeless 80% were found to have cognitive impairment-brain injury related.

- In an unpublished investigation of deficits in cognitive functioning, 97 chronically homeless persons were selected and tested with a neuropsychological battery, 80 of the 97 reported hx of TBI, 70% scored in the 10th percentile or below in at least one area of functioning.

- Boston-67% of 152 persons in a homeless shelter reported having a head injury, 71% reported having more than 1 injury, 73% reported being hospitalized after the injury, 77% of the 73% hospitalized had no follow up tx.

- Toronto-601 Men and 303 women at shelters and meal programs in 2004-2005 (response rate 76%), lifetime prevalence 53% for TBI and 12% for moderate to severe TBI.
H3 and TBI

- **Vulnerability Index**
- 259 surveys completed: 27% responded positively to identifying with having a TBI
- 40% responded positively that they had been a victim of attack/violence
- 51 Homes in Tucson 402 surveys
- 26% TBI
- 41% victim of violence
Domestic Violence and TBI

- Poor Women are at a higher risk for violence as poverty increases stress and lowers a person’s ability to take control of their own environment and seek protective care.
- Study out of John Hopkins found:
  - 436 sheltered homeless and low income housed women
  - 84% of these women had been assaulted
  - 63% had been assaulted by parental caretakers
  - 60% had been physically attacked by intimate male partner
Domestic Violence and TBI

- Brain Injury Association of America Reports:
- 51 Women were surveyed out of 169 women who came to three ED’s over a 7-9 month period with injuries related to assault or abuse
- Overall 35% of the participants were identified as having a mTBI
Leading Causes in Domestic Violence or any kind of Abuse

- Greater than 90% of all injuries secondary to DV occur to the head, neck or face region—(Monahan & O’Leary, 1999)
  - Forcefully hitting partner on the head with an object
  - Smashing her head against a wall
  - Pushing her downstairs
  - Shaking her
  - Strangling her

-New York State Office for the prevention of DV
General Population Leading Causes Of Injury

- Falls-35.2%
- Motor vehicle crashes-17.3%
- Being struck by or falling against objects-16.5%
- Assault-10%
- Near drowning
- Strokes, aneurysms, anoxia, brain infections and other non-traumatic brain injuries
- Firearm accidents
- Sports and recreational activities
Causes more significant to the homeless population

- A disproportionate number of homeless lived outside the family home during childhood (foster care, institutional settings)-physical/sexual abuse in home of origin or in alternate setting
- Chronic Drug and ETOH use-Wernicke Korsakoff Syndrome
- Jail
- Street living related violence
Who is at the Highest risk?

- Males are more likely than females to sustain a TBI.
- The age groups at highest risk are:
  - 0-4 year olds
  - 65 +
  - 15-19 year olds
- Vulnerable populations at risk:
  - Veterans-20%
  - Persons who are homeless -50%
  - Persons in jail or prison-27%-87%
  - DV Survivors 35-97%
Because of more effective emergency treatment in recent years, the number of persons who survive a traumatic brain injury has increased greatly.

Groups whose members have high incidence of TBI:

- Blasts are the leading cause of TBI for active duty military, accounts for 69% of TBI cases in the current conflicts.
Understanding Brain Injury
Brain Injury Types

- Congenital Brain Injury
- Acquired Brain Injury
  - Traumatic Brain Injury
    - Closed Head Injury
    - Open Head Injury
  - Non-traumatic Brain Injury

Savage, 1991
A traumatic brain injury (TBI) is caused by a blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain. Not all blows or jolts to the head result in a TBI. The severity of a TBI may range from “mild,” i.e., a brief change in mental status or consciousness to “severe,” i.e., an extended period of unconsciousness or amnesia after the injury.
TBI Severity Definition

- "Mild"—a head injury that left the person dazed, confused, but resulted in no unconsciousness or LOC < 30 min
- "Moderate"—LOC that lasts a few minutes to a few hours. May be followed with weeks of confusion—can be associated with contusions or hematomas, effect can be long lasting
- "Severe"—coma, contusions, hematomas, axonal injury
A traumatic brain injury (TBI) is a result of:

- Blunt or penetrating trauma to the head such as a fall or gunshot wound.
Understanding Brain Injury
Coup - Contrecoup Injury

- Coup – contrecoup injury from acceleration - deceleration forces such as motor vehicle crashes or shaken baby syndrome.
Understanding Brain Injury
Coup - Contracoup Injury

- External impact/force causes brain to move violently within the fluid-filled skull and injury occurs at the point of impact (coup) and to the side opposite the point of impact (contracoup injury).
Understanding Brain Injury

Concussion

- May or may not result in a loss of consciousness.
- Clear structural damage may or may not be present.
- Can result in dysfunction in the absence of structural damage.
- A clustering of symptoms is known as post-concussive syndrome (PCS).
Repeated concussions, such as repeated incidents of abuse and sports related injuries, can have cumulative effects.

Symptoms related to post-concussive syndrome can lead to significant life-long impairments and debilitating effects on those who survive them.
Junior Seau and Dave Duerson
TBI/Concussion and lost teeth in homelessness

- Dentists at the forefront of identifying concussion/TBI?
- Asking how patients lost teeth can reveal history of undiagnosed TBI or mTBI
Healthcare Disparities

- TBI’s sustained following homelessness may go undetected-intoxicacated in the ED
- A Study of homeless persons presenting in the ED in Denver found that homeless persons were less than half as likely to be admitted to the hospital
Understanding Brain Injury
Non-Traumatic

- Examples of non-traumatic brain injury from medical conditions include:
  - Infectious disease (e.g., meningitis, encephalitis)
  - Brain tumor
  - Cerebral-vascular dysfunction (e.g. stroke, cardiac disorders)
  - Toxic chemical or drug reactions (e.g., lead poisoning, carbon monoxide poisoning)
  - Anoxic injury
Understanding Brain Injury

Hypoxia/anoxia

- Suffocation
- Suicide attempts
- Near drowning
- Other injuries (cardio or pulmonary) can reduce blood flow and oxygen to the brain
- Lack of oxygen/blood flow for more than 3 - 4 minutes causes generalized damage
Brain Function

The brain is -

- Our personal, private universe
- What makes us distinctly human
- Our sensory processor
- Responsible for reasoning, language, complex social relationships, and morality
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

**Motor Strip**

**Parietal Lobe**
- Sense of touch
- Differentiation: size, shape, color
- Spatial perception
- Visual perception
- Sense of taste and smell

**Occipital Lobe**
- Vision
- Visual Perception
- Recognition of Printed Word

**Cerebellum**
- Balance
- Coordination
- Skilled motor activity

**Brain Stem**
- Breathing
- Heart rate
- Arousal/consciousness
- Sleep/wake functions
- Attention/concentration
Understanding Brain Injury
Areas of Impact

- Functional/Physical
- Cognitive
- Personality/Emotional
- Psychological/Behavioral
Impacts of Brain Injury
Functional/Physical

- Impaired Mobility
- Impaired Body Functions
- Impaired Sensory Experiences - overstimulation
- Seizure disorders – alterations in brain functioning between seizures - may introduce a variety of psychiatric dimensions.
- Fatigability – physical and mental
- Chronic Pain
- Headaches
- Changed Eating Behaviors
- Sleep Disorders (especially important during adolescence. Sleep – critical for adolescent brain development and brain function. Sleep or lack of can effect new learning and memory.)
Impacts of Brain Injury
Common Cognitive Deficits

- Reduction in abstract reasoning capacity
- Difficulty grasping the main point of a discussion
- Difficulty applying points of interest to one’s life
- Reductions in complex information processing skills
- Impaired attention and concentration
- Heightened distractibility
- Difficulty with new learning and short term memory
- Increased mental fatigue

- Subtle communication problems (e.g. tangentially)
- Judgment problems
- Visual-spatial impairments, including trouble with directions, mechanical tasks, or visual field defects
- Low fatigue thresholds
- Problems with planning and organizing
- Initiation deficits
- Confusion and perplexity
- Problems with flexibility of thinking
- Basic intellectual deficits as measured by IQ
- Slowness in thinking and performance
What cognitive deficits may look like….

- Difficulty remembering info
- Difficulty keeping appointments
- Difficulty following instructions
- Difficulty or inability to read/write
- Difficulty finding their way to appointments
- Difficulty Relating to others “social failure”
- Difficulty Taking meds as prescribed
- Difficulty with waiting
- Difficulty maintaining good boundaries
- “difficult to engage” “poor historian”
- Difficulty learning new information or the rules
- Problems recalling already learned information
- Difficulty initiating
A note about “Social Failure” and cognitive dysfunction

- TBI Model System Mount Sinai School of Medicine reports in Traumatic Brain Injury Among Homeless Persons…
Understanding Brain Injury
Impacts of Brain Injury:
Organic-based Personality/Emotional Changes

- Disinhibition
- Suspiciousness
- Impulsivity
- Lack of awareness of deficit and unrealistic appraisal
- Reductions in or lack of the capacity for empathy; inability to experience emotions
- Childlike emotional reactions or behavior
- Uncontrolled laughing or crying; mood swings (emotional labality)
- Preoccupation with one’s own concerns (egocentrism)
- Poor social judgment

- Rage reactions
- Euphoria
- “Flat” affect
- Agitation
- Reduced or altered sense of humor
- Low frustration tolerance
- Misperception of other people’s facial expressions/intentions; inability to perceive emotions
- Hyper-sexuality or hypo-sexuality
- Catastrophic emotional reactions
Impacts of Brian Injury
Psychological/Behavior

- Sadness
- Hopelessness and despair
- Helplessness
- Reduced self-esteem
- Withdrawal from social contact
- Increased sense of dependency on others
- Psychologically-based denial or minimization of problems
- Shame
- Preoccupation with the past
- Unrealistic expectations of family, friends, co-workers
Psychiatric Co Morbidities and Brain Injuries

- Research is showing that there is a high prevalence of individuals reporting TBI with co-occurring substance disorder and severe mental illness, one study reports up to 72%.
- Symptoms like paranoia, obsession, depression.
Suicide and TBI

- Pts with TBI are 4 times as likely to commit suicide
- One study screened 172 participants with TBI using the Beck Scale for Suicide Ideation
  - 35% had significant levels of hopelessness
  - 23% had suicide ideation
  - 18% had made a suicide attempt
WHAT ARE WE DOING ABOUT IT????

- **Brain Injury Alliance**
- **UMOM New Day Centers** mission is to provide homeless families and individuals with safe shelter, housing and supportive services to assist them in reaching their greatest potential.

**The Diane Halle center for family justice**

The Diane Halle Center for Family Justice promotes the well-being and protects the human rights of children and families through multi-disciplinary initiatives in education, advocacy, and scholarship. The Center provides free or reduced-fee legal representation, advice and support to victims of family violence, child abuse, sexual assault, sex trafficking, and other vulnerable populations that the private market would otherwise fail.
UMOM/Halle/BRAINS Clinic Project

- Started Feb 2012
- 23 patients
  - 14 UMOM
  - 9 Watkins
- Grant exclusive 9
  - Neurology/Social Work total visits 47, 31 UMOM, 9 Watkins
  - Neuropsychology 6
  - Psychiatry 1
  - Radiology 5
HELPS BRAIN INJURY SCREENING TOOL

Consumer Information: ____________________________

Agency/Screener’s Information: ____________________________

H Have you ever Hit your Head or been Hit on the Head? □ Yes □ No

Note: Prompt client to think about all incidents that may have occurred at any age, even those that did not seem serious: vehicle accidents, falls, assault, abuse, sports, etc. Screen for domestic violence and child abuse, and also for service related injuries. A TBI can also occur from violent shaking of the head, such as being shaken as a baby or child.

E Were you ever seen in the Emergency room, hospital, or by a doctor because of an injury to your head? □ Yes □ No

Note: Many people are seen for treatment. However, there are those who cannot afford treatment, or who do not think they require medical attention.

L Did you ever Lose consciousness or experience a period of being dazed and confused because of an injury to your head? □ Yes □ No

Note: People with TBI may not lose consciousness but experience an “alteration of consciousness.” This may include feeling dazed, confused, or disoriented at the time of the injury, or being unable to remember the events surrounding the injury.

P Do you experience any of these Problems in your daily life since you hit your head? □ Yes □ No

Note: Ask your client if he/she experiences any of the following problems, and ask when the problem presented. You are looking for a combination of two or more problems that were not present prior to the injury.

- headaches  □ difficulty reading, writing, calculating
- dizziness     □ poor problem solving
- anxiety       □ difficulty performing your job/school work
- depression    □ change in relationships with others
- difficulty concentrating □ poor judgment (being fired from job, arrests, fights)
- difficulty remembering

S Any significant Sicknesses? □ Yes □ No

Note: Traumatic brain injury implies a physical blow to the head, but acquired brain injury may also be caused by medical conditions, such as: brain tumor, meningitis, West Nile virus, stroke, seizures. Also screen for instances of oxygen deprivation such as following a heart attack, carbon monoxide poisoning, near drowning, or near suffocation.

Scoring the HELPS Screening Tool

A HELPS screening is considered positive for a possible TBI when the following 3 items are identified:

1. An event that could have caused a brain injury (yes to H, E or S), and

2. A period of loss of consciousness or altered consciousness after the injury or another indication that the injury was severe (yes to L or E), and

3. The presence of two or more chronic problems listed under P that were not present before the injury.

Note:

- A positive screening is not sufficient to diagnose TBI as the reason for current symptoms and difficulties - other possible causes may need to be ruled out.

- Some individuals could present exceptions to the screening results, such as people who do have TBI-related problems but answered “no” to some questions.

- Consider positive responses within the context of the person’s self-report and documentation of altered behavioral and/or cognitive functioning.

The original HELPS TBI screening tool was developed by M. Picard, D. Sarnsbrick, R. Paluck, 9/91, International Center for the Disabled, TBI-NET, U.S. Department of Education, Rehabilitation Services Administration, Grant #H133M00002. The HELPS Tool was updated by project personnel to reflect recent recommendations by the CDC on the diagnosis of TBI. See http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/physicians/mbt/diagnosis.htm.

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After a Brain Injury

Key Points

- Injury in childhood results in an underdevelopment of the brain functions of the areas impacted by the injury.

- Abilities that are just developing or have not yet emerged are the most sensitive and more likely to be disrupted as a result of brain injury.
Implications for providers

- Use the HELPS screening
- Use of questions related to head injury:
  - Special education
  - How many times have you been hit
  - Ever been hospitalized for brain injury
  - Take an inventory of scars- Posttraumatic amnesia may limit their memory of the injury
Strategies and Techniques

- Remove distractions in the environment
- Use leveling—a physical position that results in having a comparable eye level-attention
- Use simple language and short sentences
- Allow ample time
- Consider the complexity of a task—Break tasks down into steps
- Help reduce choices
WRITE EVERYTHING DOWN

- WRITE EVERYTHING DOWN-Even a summary of your discussion with the client, list what you are responsible for and what they are responsible for.
- Get them a calendar or datebook and incent them to use it.
- Help them get organized.
- Repetition, Repetition, Repetition.
- Errorless Learning.
Strategies and Techniques

- Do not assume that people can negotiate public transportation
- Accompany them to appts, if possible
- Limit to communication to one mode at a time-do not show something new if talking to him or her about it
- Have the summarize what you talked about at the end to check for understanding
Brain Injury Alliance of AZ: Resources and Services

- Statewide Support Groups
- Brain Injury Specific Information and Referral
- Online directory of providers with specific brain injury experience
- Support Programs (Mentor Program, Camp)
- Educational Conferences and Workshops
- Advocacy
- Prevention Programs
“Left to fend for themselves, the survivors of brain injury, already confused by their inability to be the people they were prior to the injury, now face the daunting task of demonstrating that an injury they do not understand and comprehend is producing the confusion they cannot communicate.”

— Unknown
Questions
References

- http://www.biausa.org
- http://usa.safekids.org
- http://cdc.gov
- http://www.azdhs.gov
- http://www.brookhavenhospital.com