


Traumatic Brain Injury: What Vocational Specialists Need to Know

Nathan D. Zasler, MD
CEO & Medical Director,
Concussion Care Centre of Virginia
And Tree of Life Services
Medical Director, IWALK Programs
Sheltering Arms Hospitals
Clinical Professor, PM&R, VCU,
Richmond, Virginia, USA
Associate Professor, PM&R, UVA,
Charlottesville, Virginia USA
Chairperson, IBIA

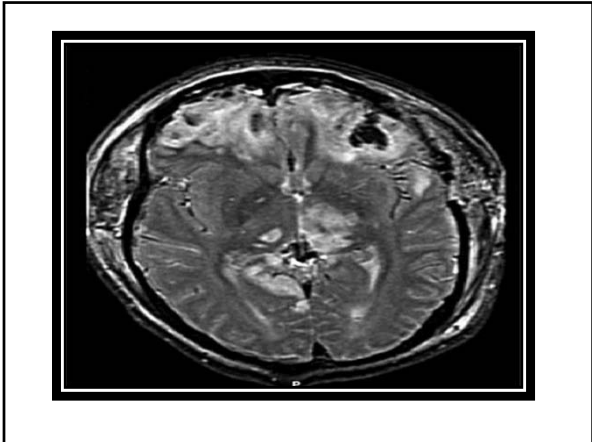


Introduction

- About 1.7 million people in U.S. sustain a TBI annually.
- TBI is a contributing factor in about a third of all injury related deaths in this country per year.
- True incidence of TBI is unknown – Many persons never seek medical attention or do so “secondarily”.
- No accepted definition that is cross-disciplinary, especially for MTBI.

Introduction

- Young males 15 -24 predominate
- Most persons injured in MVA
- Most with concurrent injuries/sequelae
- Approx. 80% or more of all TBI is mild based on initial neurologic criteria
- Moderate 10%, Severe 10%



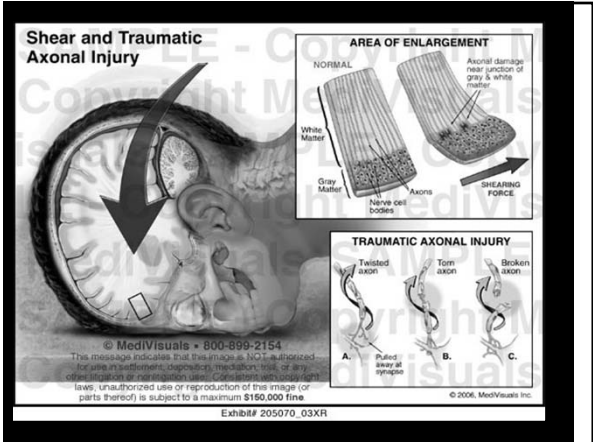
Glasgow Coma Scale

Best eye response (E)	Spontaneous – open with blinking at baseline	4
	Opens to verbal command, speech, or shout	3
	Opens to pain, not applied to face	2
	None	1
Best verbal response (V)	Oriented	5
	Confused conversation, but able to answer questions	4
	Inappropriate responses, words discernible	3
	Incomprehensible speech	2
	None	1
Best motor response (M)	Obeys commands for movement	6
	Purposeful movement to painful stimulus	5
	Withdraws from pain	4
	Abnormal (spastic) flexion, decorticate posture	3
	Extensor (rigid) response, decerebrate posture	2
	None	1

- ### ACRM Definition
- Traumatically induced disruption of cerebral function, as manifested by at least one of the following:
 - LOC of no longer than 20 minutes
 - Any loss of memory (either RGA or AG)
 - Any alteration in mental status at the time of the accident, even the absence of LOC or amnesia
 - Physical symptoms which are potentially brain related
 - Development of post-traumatic cognitive deficits – can't explain all by emotional factors

- ### More on Definition
- **Following qualifiers:**
 - GCS 13 - 15 without subsequent worsening
 - PTA of 24 hours or less
 - LOC no longer than 30 minutes
 - **Problems with the definition**
 - Rate of false positive DXS
 - Lumping of patients may undervalue predicted impairment

- ### Pathophysiology
- Direct impact of cranium not necessary for TBI
 - LOC not necessary for TBI
 - Hallmark are "strain forces"
 - Acceleration/deceleration of HEAD
 - Stretching of cervical spine
 - Skull distortion due to pressure gradients



Types of Injury in TBI

- Primary
 - FCC
 - DAI
- Secondary
 - HIBI
 - Acidosis
 - Neurotoxic Cascade
- Tertiary
 - Contractures
 - Epilepsy
 - Movement Disorders

Acute Neuromedical Issues

- What is the significance of initial injury severity (GCS score)?
- Range of acute neurologic sequelae associated with TBI
- Look for other injuries that may present with PCD-Like symptoms
- Atypical symptoms – may be organic but not always
- Transient phenomena – Checks EMS and ER records
- Understand expected scope of problems

Acute Record Review

- Initial neurologic exam
- Issue of LOC vs. AIC
- Initial GCS and post-resuscitation GCS
- X-rays – head, neck, etc.
- Neurodiagnostics
- Drug/ETOH Levels
- Risk factors for HIBI

Past Medical History

- Prior CHI or TBI
- Prior MVA, falls, assaults
- Prior LOC
- Prior psych. History
- Learning disability or ADD
- Other medical conditions
- History of illicit substance use
 - Marijuana
 - Alcohol
 - Other drugs

Acute Record Flags

- Skull fractures
- Intracranial pathology by static imaging
- Significant duration of PTA
- Positive drug and/or alcohol levels
- Risk factors for HIBI



Whiplash Injuries

- Overview of typical recovery
- Chronic pain issues
- Cervicogenic Dizziness
- Myofascial dysfunction
- Basilar artery migraine
- Vascular or nerve injury

Cranial & Cranial Adnexal Trauma

- Overview of sequelae
- Dizziness
- Tinnitus
- Smell/Taste deficits
- Visual deficits
- Peripheral nerve dysfunction
- Peripheral vascular trauma

Brain Trauma

- Overview of natural history
- Pre-existing conditions
- Impairment vs. disability issues
- Common vs. rare neurologic sequelae after ABI
- Prognostication issues

Main Impairment Areas

- Cognitive
- Emotional
- Behavioral
- Physical
- Neuromedical
- Language/communication based

Cognitive Dysfunction

- **Differential diagnosis:**
 - ABI
 - Pain
 - Affective disturbance
 - DIMS – Sleep disturbance
 - Dissimulation behavior
 - Pre-existing condition
 - Seizure disorder
 - Vestibular dysfunction
 - Drug induced impairment

Behavioral Dysfunction

- Range of problems
- Apportionment: Primary or secondary
- Importance of examining pre-injury personality traits and psychologic/ psychiatric history thoroughly for vulnerabilities
- ABI VS. other residua responsible?
 - Pain
 - DIMS
 - Frustration
 - Dysphasia



Examination of the Patient with TBI

- Know what to expect
- Know what not to expect
- Be thorough including complete neuromuscular-skeletal exam, MSE, and psychemotional evaluation
- Include tests for response bias and effort

Neurodiagnostics

- ABI Diagnosis often times based on "soft" testing results – Neuropsychological exam
- Limitations of testing and differential diagnostic issues
- Is typical testing pathognomonic of ABI due to trauma – issue with MTBI?
- Dating of testing results to specific injury
- "JUNK SCIENCE" issues – normative data, data in ABI, data in other disease entities

Neuropsychological Testing

- Issues of differential diagnosis
- Issues of adequate pre-injury baseline assessment:
 - Cognitive
 - Psychoemotional vulnerabilities
- Issues of adequate attribution of emotional status and motivation to perform well (Back to response bias and effort)

Causality Determination

- Influence of pre-existing conditions
- Temporal relationship of symptoms
- Corroboration issues
- Consistency of complaints with expectancies
- Natural history of recovery
- When patients get worse – think non-neurologic factors

Treatment Issues

- Modulate physical impairments
- Facilitate sleep
- Modulate pain
- Modulate behavior
- Provide cognitive compensatory strategies
- Address fatigue – cognitive and physical
- Check driving/work/leisure activities for safety/clearance

Therapy Referrals

- This is specialized treatment...not just any therapist should treat.
- PT – motor control, spasticity management, myofascial pain TX. & Vestibular habituation training/balance retraining
- OT – to address ADLs and cognitive impairment issues
- SLP – to address reading, writing and auditory processing difficulties as well as pragmatic language deficits. To treat dysprosody, dysphasia and dysphagia.

Who Should Treat

- No one specialty is equipped to handle TBI problems based on training alone
- Find someone who "Knows their stuff", has experience & a good reputation
- An interdisciplinary, holistic, functional approach should be used in rehabilitation

Rehabilitation Programs for Persons with TBI

- Appropriate and prompt medial diagnosis and treatment
- Reassurance
- Education
- Support
- Counseling
- Regular monitoring
- Provision of compensatory strategies

Treatment Locations

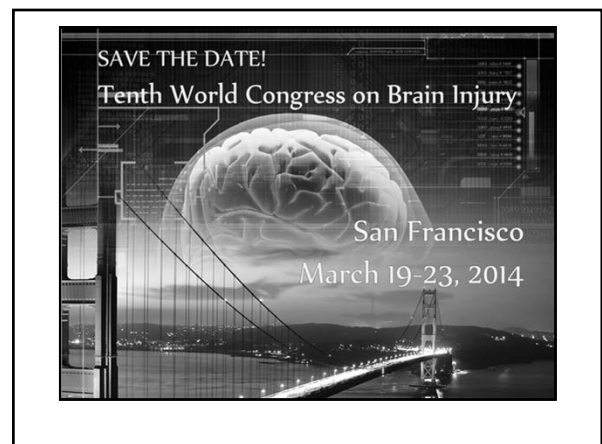
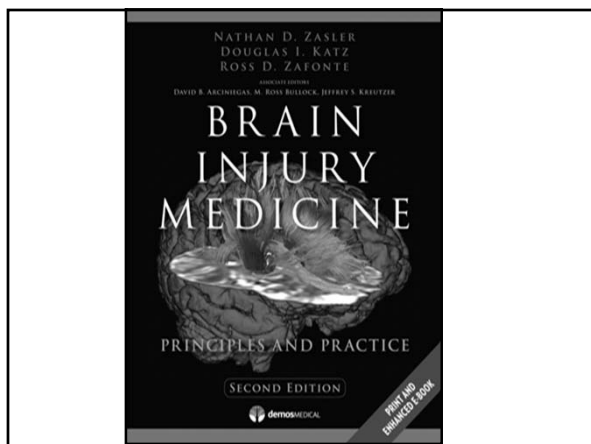
- Field
- Inpatient
- Sub-acute
- Outpatient
- Transitional
- Assisted living/long term
- Respite
- Community based

Return to Work

- Most folks after mild to moderate TBI can return to some form of gainful employment
- Persons with severe TBI are more challenging for lots of different reasons
- Severe physical limitations generally are not the major obstacle in work reentry or job maintenance

Conclusions

- We need a better foundation for clinical diagnosis & treatment
- We need a better understanding of risk factors for delayed/poor outcome
- Need more sensitive and specific diagnostic measures
- Differential diagnosis remains paramount in clinical care
- There is a lot we can do to facilitate recovery following TBI



Contact Information

DR. ZASLER's E-MAIL:
nzasler@cccv-ltd.com



TBI and Employment: Critical Issues

Patricia Goodall, Ed.S., CBIST
DARS Brain Injury Services Coordination Unit
Community Based Services Division
Virginia Department for Aging
and Rehabilitative Services

Research

- 3.2 million people live w/effects of brain injury: estimated that nearly half fail to return to work
- Colorado: state registry of patients hospitalized for TBI – about ½ return to work within a year
- 2006 study: rate falls to 20% failure rate at 10 years post injury
- VR services helped only about 50% of those served achieve successful employment

Vocational Rehabilitation

- 1997 sample of hospitalized TBI patients: only about 1/3 were even aware of the VR system
- Better outreach from VR system is needed to newly injured and to those with long-time injuries (chronically unemployed)
- Better partnering between VR and researchers to identify “what works” – build a strong evidence base (problems with assigning people to a “control group” is a barrier)

Return to Work Strategies

- One size does not fit all: individualized approach
- Job placement staff must have knowledge of BI
- Research suggests:
 - Provide VR services early in the rehab process
 - Create a supportive work environment
 - Cognitive training: compensatory vs restorative
 - Assistive Technology
 - 2009 study: Supported Employment; Case Coordination; Program-Based VR

Vocational Rehabilitation Process

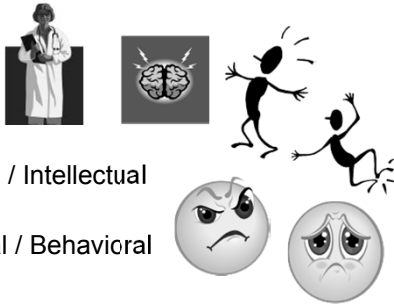
- Assumptions:
 - Does the individual with a brain injury request assistance?
 - Do not rely on the family's insistence that the person wants to work!
 - Is individual eligible for services? (documented disability; disability is a barrier to employment; financial need if there will be cost services)

Vocational Rehabilitation Process

- Assumptions:
 - Is individual medically and psychologically stable (to focus on employment goal)? Evaluate medical, physical, cognitive status.
 - Do not say "Come back in two years..." when you have recovered!
 - Can individual return to same job or find new job?
 - Assess capacity to recover abilities **and** learn new things. Person may have difficulty recognizing changed strengths, challenges.

Effects of Brain Injury

- Medical
- Physical
- Cognitive / Intellectual
- Emotional / Behavioral



Where to start?

- Consider using a "support team" approach! Needs are long-term and complex – you will need help to ensure continued success on the job!
 - Assessment – Start with recent and comprehensive neuropsychological evaluation – ALSO use "real life" assessments whenever you can!
- Recommendations should be work-related but also include ways to improve daily functioning.

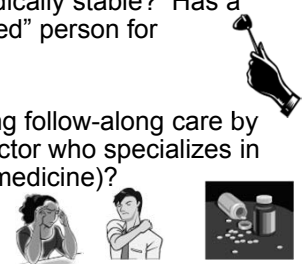
Where to start?

- Strategies should be compensatory in nature, not restorative! Individual must "buy into" the use of any strategy or it will not be effective.
- It's all about SUPPORT and JOB MATCH!
These are critical to success in employment!



Medical

- Is the person medically stable? Has a physician "released" person for employment?
- Is person receiving follow-along care by psychiatrist (doctor who specializes in rehabilitation medicine)?



Medical

- What medications does person take? What are effects? Who is monitoring?
- Fatigue, headaches, pain may affect job performance



Physical



- Is person still receiving outpatient medical therapies? If so, which therapies and what are goals?
- What is prognosis in regard to physical issues – how much healing, recovery is expected? “Real life” evaluations are usually informative.
- What about assistive technology, augmentative communication devices, orthotics?

Cognitive / Intellectual



- Post-injury, individual may score lower on tests of intelligence, but not across all scales.
- Higher ability pre-injury, better outcome post-injury.
- Mental processes may be slower, not as accurate.



Cognitive / Intellectual

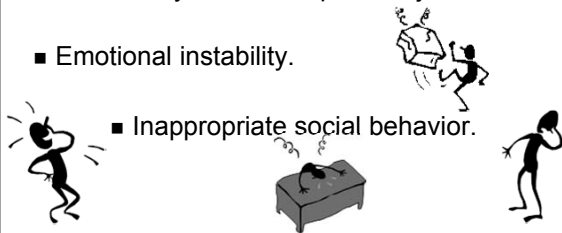


- Concentration decreases; distractibility increases.
- Memory problems present a significant challenge in the ability to function on a daily basis – and in employment setting.
- Compensatory strategies and supports are key to success on job!



Emotional / Behavioral

- This is typically the biggest challenge to successful employment – it is usually not the inability to learn or perform job tasks.
- Emotional instability.
- Inappropriate social behavior.




Where to start?

- Team approach – always a good option!!
- Assessment – neuropsychological and “real life” evaluations are the most informative.
- Strategies / Supports – keys to success!
- It's all about SUPPORT and JOB MATCH!



Assessment



- Assessment within last two years, as feasible
- Evaluate status: medical, physical, cognitive/intellectual, and emotional/behavioral 
- Consult with / add to “support team” as needed: physician, therapist (OT, PT, SLP) psychologist, behavior specialist, job coach



Assessment



- Vocational evaluation / situational assessment – always try “real life” assessments, you will get valid information if done well!
- What are the recommendations?
Counselor should request vocationally related reports, but also ask for daily functioning strategies – a life skills trainer can support person to function better in non-work settings – this boosts employment success!


Strategies



- Consumer participation and direction are critical in choosing / implementing compensatory strategies! 
- Are there any medical / neuropsychological recommendations or strategies?
- Is behavior consultation needed? If so, what is consultant's philosophy (Positive Behavior Support)? 


Strategies



- Community living assessment: what strategies are needed to function better on daily basis? What does person use, what is successful?
- It only works if it works! 


Employment Support



- Most people with significant brain injury benefit from ongoing employment support: job coach training services at a minimum.
- Supported employment is ideal: job placement, on site training, long-term follow-along. 

Employment Support



- Employment Specialist is part of the TEAM! 
- Same strategies used at home and in community should be used on job site (and vice versa): Life Skills Training can be critical piece!

Job Match

- It's all about the JOB MATCH!
- Work environment, job duties should be a good "fit" with individual's strengths, abilities, and challenges.
- Example: If individual does not handle interruptions well, has poor interpersonal skills, is receptionist a good match?



Job Match

- Individual with poor hygiene: Is solution to find a job where odor is not noticed? Or to work with person to improve hygiene (life skills training)? Maybe both?



Where to end?



- It may end for the rehab specialist, but for the person with a brain injury: there is NO END...
- Best practice is to re-assess in all areas on ongoing basis, individuals continue to improve over time ("...it's been two years, and I'm still having problems...")
- Even if currently employed, case closed, can refer person back to DRS: counselor can provide post-employment support or re-open case.



What is success?

- Consider employment in context of person's life: it is not a separate "event" that begins and ends.
- Long-term support, not just in employment.
- Team approach!! Supportive people across all of the individual's environments.



What is success?

- Re-define success: demographics, challenges.
- Rick Parente study: social support and supported employment are best indicators of job success.



Contact Information

Patricia Goodall, Ed.S., CBIST
Brain Injury Services Coordination Unit
Community Based Services Division
Department for Aging & Rehabilitative Services
8004 Franklin Farms Drive, Henrico, VA 23229
Phone: 804/662-7615; Cell: (804) 614-0284
E-mail: Patti.Goodall@dars.virginia.gov

Website: <http://www.vadars.org>

