2016 ABVE ANNUAL CONFERENCE

FROM BOTH SIDES NOW: LEARNING FROM EACH OTHER

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IMPLICATIONS OF HEAD INJURIES IN EMPLOYABILITY EVALUATIONS

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THE FACTS-*

- 1.7 Million sustain a traumatic brain injury (TBI) each year in the United States
  - 52,000 die
  - 275,000 are hospitalized
  - 1.365 million are treated and released from an emergency department
- The number of people with TBI who are not seen in an emergency department or who receive no care is unknown
- TBI is a contributing factor to one third (30.5%) of all injury-related deaths in the USA

* *Center For Disease Control and Injury Prevention (CDC)*

LEADING CAUSES*

- Falls- 40.5%
- Other / Unknown- 19%
- Struck by / against events- 15.5%
- Motor Vehicle / Traffic Crashes-14.3%
- Assaults-10.7%
- Blasts are a leading cause of TBI for active duty military personnel in war zones

* *Center For Disease Control and Injury Prevention*

RISK FACTORS FOR TBI*

Among TBI-related deaths in 2006–2010:

- Men were nearly three times as likely to die as women.
- Rates were highest for persons 65 years and older.
- The leading cause of TBI-related death varied by age.
  - Falls were the leading cause of death for persons 65 years or older.
  - Motor vehicle crashes were the leading cause for children and young adults ages 5-24 years.
  - Assaults were the leading cause for children ages 0-4.

* *CDC*

RISK FACTORS FOR TBI *

Among non-fatal TBI-related injuries for 2006–2010:

- Men had higher rates of TBI hospitalizations and ED visits than women.
- Hospitalization rates were highest among persons aged 65 years and older.
- Rates of ED visits were highest for children aged 0-4 years.
- Falls were the leading cause of TBI-related ED visits for all but one age group.
  - Assaults were the leading cause of TBI-related ED visits for persons 15 to 24 years of age.

* *CDC*

RISK FACTORS FOR TBI *

- The leading cause of TBI-related hospitalizations varied by age:
  - Falls were the leading cause among children ages 0-14 and adults 45 years and older.
  - Motor vehicle crashes were the leading cause of hospitalizations for adolescents and persons ages 15-44 years.

CDC

TBI AND WORK RELATED INJURIES

- *American Journal of Preventive Medicine*, 2011- researchers describe the epidemiology of fatal TBI in the US workplace between 2003 and 2008. This study provides the first national profile of fatal TBIs occurring in the US workplace. The construction industry had the highest number of TBIs and the agriculture, forestry, and fishing industry had the highest rates.
- "TBI fatalities in the U.S. found that TBI accounted for 22% of all work-related injury fatalities between 2003 and 2008 and 46% of work-related falls." Source: Journal of Occupational Environmental Medicine 2013 May; 55(5) 507-513 Jeanne M. Sears, PhD, RN, et.al.

BRAIN INJURY DEFINITIONS*

- **Traumatic Brain Injury (TBI)**
  TBI is defined as an alteration in brain function, or other evidence of brain pathology, caused by an external force.
- **Acquired Brain Injury**
  *An acquired brain injury is an injury to the brain, which is **not** hereditary, congenital, degenerative, or induced by birth trauma. An acquired brain injury is an injury to the brain that has occurred after birth.*
- Examples of acquired brain injury include stroke, near drowning, hypoxic or anoxic brain injury, tumor, neurotoxins, electric shock or lightening strike.

* *Brain Injury Association of America*

NO TWO BRAIN INJURIES ARE IDENTICAL

GLASGOW COMA SCALE (GCS)

TABLE 39-2
Glasgow Coma Scale

BEHAVIOR	RESPONSE	SCORE
Eye opening response	Spontaneously	4
	To speech	3
	To pain	2
	No response	1
Best verbal response	Oriented to time, place, and person	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
Best motor response	Obeys commands	6
	Moves to localized pain	5
	Flexion withdrawal from pain	4
	Abnormal flexion (decorticate)	3
	Abnormal extension (decerebrate)	2
	No response	1
Total score:	*Best response*	15
	Comatose client	8 or less
	Totally unresponsive	3

GCS- SEVERITY OF BRAIN INJURY

MEASURE	MILD	MODERATE	SEVERE
Glasgow Coma Scale	13-15	9-12	3-8
Loss of Consciousness	<30 minutes	30 minutes	>36 hours
Posttraumatic Amnesia	<24 hours	1-7 days	>7 days

THE REHABILITATIVE PROCESS

- Physiatrist- rehabilitation coordinator, pain management, and medication management
- Various levels of care- acute, sub acute, skilled nursing, residential, home health, day treatment, out patient, and community re-entry
- Physical Therapy
- Occupational Therapy
- Speech Therapy
- Cognitive Rehabilitation Therapy

THE REHABILITATIVE PROCESS CONT'D

- Case Management
- Stress Management
- Neuropsychological Evaluation and Therapy
- Psychological Counseling
- Family and Caregiver education and training
- Reintegration to home and community
- Follow up / maintenance

RANCHO LOS AMIGOS SCALE OF COGNITIVE FUNCTIONING

Rancho Los Amigos Levels of Cognitive Functioning

- **Level 1:** No response, person appears to be in deep sleep
- **Level 2:** Generalized response, person reacts inconsistently, not directly in response to stimuli
- **Level 3:** Localized response, reacts inconsistently, directly to stimuli
- **Level 4:** Confused/Agitated, person is extremely confused, agitated
- **Level 5:** Confused-Inappropriate/Non-Agitated, person is confused andresponds inaccurately to commands
- **Level 6:** Confused-Appropriate, Person is confused, responds accurately to commands
- **Level 7:** Automatic-Appropriate, person goes through daily routine with minimal confusion
- **Level 8:** Purposeful-Appropriate, person has functioning memory, responsive to environment, may display depression
- **Level 9:** Purposeful-Appropriate, goes through daily routine aware of need for stand-by assistance, depression may continue
- **Level 10:** Purposeful-Appropriate/Modified Independent, goes through daily routine but may require more time or compensatory strategies, periodic depression may occur.

PHYSICAL CHALLENGES

- Speech, vision, hearing and other sensory impairments / sensitivities
- Lack of fine motor control
- Plasticity of muscles
- Paresis or paralysis of one or both sides
- Seizure disorders
- Balance / vestibular issues
- Gait impairments
- Headaches

EMOTIONAL CHALLENGES

- Lability and reactivity
- Disrupted emotional regulation
- Inability to cope
- Limited self-awareness
- Apathy
- Motivational deficit (or excess)
- Depression, anxiety and reactions (including cultural) to disability

BEHAVIORAL CHALLENGES

- Agitated
- Restlessness
- Aggressive
- Noncompliance with treatment
- Disinhibition / Impulsivity
- Inability to self-monitor

COGNITIVE CHALLENGES

- Short and long-term memory deficits
- Impaired concentration
- Limited attention span
- Decreased processing speed
- Communication challenges- apraxia, aphasia
- Decreased abilities in reading and writing
- Visual-spatial deficits
- Executive functioning deficits- problem-solving, planning, sequencing, judgement, decision making, multi-tasking, etc.

NEUROPSYCHOLOGICAL ASSESSMENT

- Screening *versus* Comprehensive Evaluation
- Best time to complete the evaluation / retest
- What is the purpose?
  - Differential diagnosis
  - Guide treatment during rehabilitation
  - Clarify extent of cognitive, behavioral and emotional issues
  - Define permanent disability
  - Vocational implications

NEUROPSYCHOLOGICAL ASSESSMENT- WHAT IS IT?

- Attention
- Working Memory
- Memory and Learning
- Processing Speed
- Executive Functions
  - Problem Solving and Conceptualization
  - Planning and Organization
- Language Abilities

NEUROPSYCHOLOGICAL ASSESSMENT- WHAT IS IT?

- Visual Spatial Abilities
- Fine Motor Skills
- General Intelligence
- Academic Achievement
- Emotions / Behaviors / Personality
- Social Skills

EXAMPLES OF COMMONLY USED TESTS

- Mini-Mental Status Exam
- WTAR
- WAIS-IV
- Trail Making Part A & Part B
- California Verbal Learning Test-II
- Boston Naming Test
- Rey-Osterrieth Complex Figure Test
- WMS-IV

EXAMPLES OF COMMONLY USED TESTS- CONT'D

- D-KEFS-Delis-Kaplan Executive Function System
- Wisconsin Card Sorting Test
- Stroop Test
- NeuroTrax Testing
- MMPI-2 (MMPI-RF newer version)
- TOMM
- Validity Indicator Profile
- Warrington

LONG-TERM CONSEQUENCES

- CDC estimates that at least 5.3 million Americans currently have a long-term or life long need for help to perform activities of daily living as a result of a TBI.
- According to one study*, about 40% of those hospitalized with a TBI had at least one unmet need for services one year after their injury. The most infrequently met needs were:
  - Improving memory and problem solving;
  - Managing stress and emotional upsets;
  - Controlling one's temper; and
  - Improving one's job skills.

*Corrigan JD, Whiteneck G, Mellick D. Perceived needs following traumatic brain injury. Journal of Head Trauma Rehabilitation 2004; 19(3):205-16.

LONG-TERM IMPLICATIONS

- Risk for subsequent TBI
- Substance Abuse
- Alzheimer's
- Parkinson's
- Seizures
- Depression
- Anxiety / PTSD
- Psychosocial implications
- Ability to maintain relationships

CONSIDERATIONS IN THE EVALUATION-INTERVIEW

- Presentation- unkempt versus good presentation, appears age, any unusual presentation- alcohol or cigarette smell
- Adjustments to evaluation environment- change lighting, decrease background noise, etc.
- Uses an assistive device (ambulation, hearing, vision)
- Medications- taken within 24 hours and during evaluation / breaks
- Sleep problems
- Nutrition / Self Care

CONSIDERATIONS IN THE EVALUATION-INTERVIEW

- Poor historian
- Tangential communication style
- Distracted
- Emotional lability
- May rely on smartphone, calendars, notes
- Need breaks
- Postural changes

TESTING

- Decreased frustration tolerance
- Repeat instructions
- Re-administer sample items
- Visual implications-can be last to be restored
- Headaches-pain level throughout evaluation
- Need breaks / Cognitive fatigue

OBSERVATIONS

- How respond / recall simple & complex instructions
- Visual versus Auditory
- Problem solving ability
- Learning ability
- Frustration tolerance-ability to handle success & failure
- Self-awareness of testing performance
- Self-esteem / negative self talk
- Stamina / endurance over course of assessment period
- Demonstration of work-like activity

RETURN TO WORK CONSIDERATIONS

- "...There is strong evidence that a high education level is positively associated with RTW after traumatic ABI; a low education level, unemployment and length of stay in rehabilitation are negatively associated...independence in activities of daily living is positively associated with RTW..." Source: Prognostic factors of return to work after traumatic or non-traumatic acquired brain injury. Disability Rehabilitation. 2015 July 3:1-9 Donker-Cools, Wind, H., Frings-Dresen
- "...About 40% of the people with traumatic or non-traumatic ABI are able to return to work after 1 to 2 years..." How many people return to work after acquired brain injury?: a systematic review. Brain Injury. 2009 June; 23(6): 473-88

EMPLOYMENT RECOMMENDATIONS / IMPLICATIONS

- Seizure precautions
- Cognitive fatigue-may require gradual RTW
- Executive functioning issues-multi-tasking, planning, organizing, analytical reasoning, impulsivity
- Decreased processing speed-need for clear, concise, step by step job instructions
- Prioritize tasks based on times of cognitive strength-consider earlier start time

EMPLOYMENT RECOMMENDATIONS / IMPLICATIONS CONT'D

- Assistive Technology (organize, prioritize, complete tasks)
  - Calendars
  - Alerts and reminders
  - Computerized cognitive software programs
  - Helpful College/ Training Apps
    - inClass
    - The Homework App
    - iProcrastinate
    - Studious
    - IStudiezpro

EMPLOYMENT RECOMMENDATIONS / IMPLICATIONS CONT'D

- Employer flexibility- schedule, work environment, work from home potential, etc.
- Work Environments-quieter work space, ear plugs, natural light, decrease distractions, computer use / reading may be limited or intermittent
- Scheduled breaks- pacing, rest, decrease cognitive fatigue, decrease stress, improve performance
- Supports / Resources-State and Private Vocational Rehabilitation, State Brain Injury Association, local support groups, ongoing cognitive rehabilitation, neuropsychological testing, job coach/supported employment to start, work & community re-integration, college training & resources

"THE TRUE SIGN OF INTELLIGENCE IS NOT KNOWLEDGE BUT IMAGINATION"

ALBERT EINSTEIN