

The Aging Faces of Brain Injury

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- ▶ Discuss some of the most current literature on aging with a brain injury.
- ▶ Discuss how the current literature guides treatment and support to improve and enhance the lives of persons with brain injury through their lifespan.
- ▶ Introduce the concept of resiliency as within the reach of every man and woman.
- ▶ A survivor's portrait of the aging face of brain injury & lessons learned.

Severity of BI Stratification

Criteria	Mild Concussion	Moderate	Severe
Structural Imaging	Normal	Normal or abnormal	Normal or abnormal
Loss of Consciousness LOC	0-30 mins	>30 mins & <24 hrs.	>24 hrs.
Alteration of consciousness/ mental state	A moment or <24 hrs.	>24 hrs.	Severity based on other criteria
Post Traumatic Amnesia PTA	< or equal to 1 day	➤ 1 day but ➤ < 7 days	> 7 days
Glasgow Coma Score in first 24 hrs. GCS	13-15	9-12	3-8

- ▶ **Problems with current BI stratification**
 - Once a dx of mild, moderate or severe, always a dx
 - Not based upon functional abilities
 - Gap between how one is assessed at time of injury and how one may function
 - Especially true as one ages with their BI

3.3 million persons living with long term disability from TBI



3 million people for Pope Francis in Rio, 2013

Brain Injury as a Chronic Condition

- ▶ “Injury to the brain can evolve into a lifelong health condition termed chronic brain injury (CBI). CBI impairs the brain and other organ systems and may persist or progress **over an individual’s life span**. CBI must be identified and proactively **managed as a lifelong condition** to improve health, independent functioning, and participation in society.” (Hammond & Malec, 2014)
- ▶ Providing a disease management approach may reduce costs and improve outcomes (Corrigan & Hammond, 2013)
- ▶ Accommodates for a persons aging process

Brain Injury as a Chronic Condition

Disease causative or accelerative

Meets WHO definition of chronic disease process having one or more of the following characteristics:

- ▶ it is permanent, caused by non-reversible pathological alterations,
- ▶ requires special training of the patient for rehabilitation,
- ▶ and/or may require a long period of observation, supervision, or care.
- ▶ TBI increases long-term mortality and reduces life expectancy

(Masel & DeWitt, 2010; Hammond & Malec, 2013)

Is associated with,

- ▶ increased incidences of seizures, sleep disorders, neurodegenerative diseases, neuroendocrine dysregulation, & psychiatric diseases,
- ▶ as well as non-neurological disorders such as sexual dysfunction, bladder and bowel incontinence, and systemic metabolic dysregulation that may arise and/or persist for months to years post-injury.

Long term (2-3 yrs) After Traumatic BI: Inst. Of Medicine Report Summary 2009

TBI Severity	Sufficient Evidence of Causality	Sufficient Evidence of Association	Limited/ Suggestive Evidence of Association	Inadequate /Insufficient Evidence of Association
Mild			Unprovoked Seizures (with LOC or amnesia), Alzheimer's dementia, Parkinsonism (with LOC); PTSD (military pops.)	Neurocognitive deficits compared with pre-injury levels 1-3 years post injury. PTSD (civilians); Long term social impact (unemployment, unable to live independently)

Long term Changes After Traumatic BI: IOM Report 2009

TBI Severity	Sufficient Evidence of Causality	Sufficient Evidence of Association	Limited/ Suggestive Evidence of Association	Inadequate /Insufficient Evidence of Association
Moderate	Unprovoked seizures,	Growth Hormone insufficiency, Alzheimer's dementia, Parkinson, Long Term impact on employment, independent living, etc., premature mortality	Neurocognitive deficits, diabetes insipidus, psychosis	Brain tumor

Long term Changes After Traumatic BI: Inst. Of Medicine Report Summary 2009

TBI Severity	Sufficient Evidence of Causality	Sufficient Evidence of Association	Limited/ Suggestive Evidence of Association	Inadequate /Insufficient Evidence of Association
Severe	Unprovoked seizures	Neurocognitive deficits, GH insufficiency, Endocrine dysfunction, Alzheimer's dementia Parkinsonism, Long term adverse impact on employment, indep. living, social relations, premature mortality	Diabetes insipidus, psychosis	Brain Tumor
Penetrating	Unprovoked seizures, mortality	Neurocognitive decline, long term unemployment		

- ▶ Complaints of dizziness & weakness
- ▶ **Fatigue**
- ▶ Neuroendocrine problems –
 - Pituitary dysfunction, hypopituitarism
 - Growth hormone, most common hormonal deficiency (fatigue, poor memory & concentration, depression)
- ▶ Headaches
- ▶ **Visual & hearing difficulties**
- ▶ Sexual dysfunction
 - (Colantonio, et al, 2004; Hiller, et al. 1997, Masel, 2013)

- ▶ Adolescents and adults affected by moderate or severe TBI who were discharged from rehabilitation facilities were more than twice as likely to die 3.5 years after injury compared to persons in the general population of similar age, sex, and race (Harrison-Felix et al., 2012).
- ▶ Adolescents and adults who received rehabilitation for TBI, 2 in 10 will have died at 5 years post-injury, and nearly 4 in 10 will have declined in function from the level of recovery attained 1–2 years after their injury (Corrigan, et al., 2014).

- ▶ **Life expectancy reduced 4 to 7 years** following TBI, dependent upon
 - Age of injury
 - Injury severity
 - Psychosocial factors
 - Level of physical disability (Brown, et al., 2004; Harrison-Felix, et al., 2009).
 - Substance use (McMillan, et al., 2007).

- ▶ **Causes of death in those post injury**
 - Same as general population – heart disease, cancer
 - Notable increases in death by seizures, infections, and cerebrovascular disease (Harrison-Felix, et al., 2013).

- ▶ **Predominance of data suggests linkage to dementia for those with moderate to severe BI.**

- ▶ **Some of the Studies**
 - In persons 5 yrs post injury when compared to those without TBI. Persons with TBI had a **1.68 times greater risk of dementia** after adjusting for socio-demographic characteristics and selected comorbidities. (Wang, et al., 2012)
 - **TBIs increase risk of dementia between 2- and 4-fold.** (Shivley, et al., 2012)

► In Addition, what can be said?

- Risk factors play a role in onset
- Presence of ApoE4 genotype increases risk of Alzheimer's Disease in general and significantly increases the risk after TBI.
- Severity of injury plays a role with more severe injury yielding increased risk.
- Males have a higher risk after TBI.

- ▶ There is some indication that **improvements are noted in emotion and psychological growth as one ages with TBI**
 - Life satisfaction diminished in the first year after injury but increased up to the next 5 years. (Corrigan et al., 2001).
 - Age was not a predictor of life satisfaction in a number of studies (Evans, et al., 2005; Heinemann, A. & Whiteneck. G. 1995).

- ▶ Dating tends to occur older, reported limited partners & opportunities
- ▶ Caregivers/families may discourage
- ▶ Personal care attendants may be involved
- ▶ LGBT - Lesbian, Gay, Bisexual, Transgender – supporting who the person is
- ▶ Medications – Antidepressants, Anti-seizure, etc. which could negatively impact sexual performance
- ▶ Hormonal Issues & Menstrual problems
- ▶ Menopause

▶ **Mediterranean diet**

- rich in omega-3 fatty acids and, vegetables, fruit, nuts and beans reduces Alzheimer's risk & maintains a healthy heart

▶ **Active lifestyle**

- Fall prevention, balance training
- Exercise can lower your risk for Alzheimer's
 - Can improve the functioning of the hippocampus and memory and reduce anxiety and depression
 - Pump some iron
 - Resistance training may increase the levels of growth factors in the brain such as IGF1, which nourish and protect nerve cells

What if we applied what we know about aging and applied it to BI?

- ▶ Live in a socially rich community
- ▶ Cognitive stimulating exercises/activities
- ▶ Medication Hygiene
- ▶ Nutritional Supplements
- ▶ Spice it up
 - Herbs and spices such as black pepper, cinnamon, oregano, basil, parsley, ginger and vanilla are high in antioxidants. Tumeric reduces amyloid plaques & may reduce risk of Alzheimer's
- ▶ Stress reduction – yoga, Thai Chi
- ▶ A purpose driven life

Accommodations as one ages

- ▶ Increase in support due to medical or physical issues to keep someone out of a SNF
- ▶ Medical – on-site visits by Internists to catch issues missed by PM & R.
- ▶ Family Education to DC issues of aging & Advanced Directives
- ▶ Exercise programs such as Chair & Wheelchair yoga
- ▶ Lower calorie diets
- ▶ Communication Groups – older residents dc with younger re lifelong disability management

- ▶ The cycle of life looks different
 - Increased independence & adaptation
 - Age related declines in functioning & need for more support
 - End of life often catches us by surprise
- ▶ Integration with other systems of care
 - Hospice, geriatric services

▶ Caregiver needs

- Most often women
- Aging of caregivers – diminished cognitive and physically capabilities
- Isolation
- Lack of respite
- Importance of support systems & groups

- Do not underestimate the loss a non-family caregiver experiences with the decline and loss of a person served

The importance of Hope & Resiliency



“Psychological resilience is defined as **an individual's ability to properly adapt to stress and adversity**. Stress and adversity can come in the shape of family or relationship problems, health problems, or workplace and financial worries, among others.

Resilience is not a rare ability; in reality, it is found in the average individual and it can be learned and developed by virtually anyone. Resilience should be considered a process, rather than a trait to be had.”

Further, “**A common misapprehension** is that resilient people are free from negative emotions or thoughts, remaining optimistic in most or all situations.

To the contrary, resilient individuals have, through time, developed coping techniques that allow them to effectively and relatively easily navigate around or through crises—In other words, people who demonstrate resilience are people with optimistic attitude and positive emotionality and are, by practice, able to effectively balance negative emotions with positive ones.” (Wikipedia, 2015)

The Brain Injury Professional – a North American
Brain Injury Professional Publication,
Special Issue on Hope and Resilience
by Dr. Kathleen Bechtold (Winter 2015)
www.nabis.org

Meet Belinda Cole



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Gardenia Stable Owner
E A Cole Trainer
Belinda Talbert up
Arlington Park

LIBERAL
Purse \$13,000

Mr Steel 2nd
Buddy Larosa 3rd
7 Furlongs 1:22:1
19 June 1979



Thank You

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