

**Monadnock Summer Lyceum
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“Brain Injury”, No Longer “The Silent Epidemic”

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Purpose: To provide education about brain injury
To provide the anatomy of a “Blast Wave Injury”
To Outline the issues facing our returning military with TBI’s
To discuss how we welcome our Veterans home

- US Civilian Prevalence of Annual Diagnoses: (CDC 2007)
 - Multiple Sclerosis 10,400
 - Spinal Cord Injury 11,000
 - HIV/AIDS 43,681
 - Breast Cancer 176,300
 - Traumatic Brain Injury (TBI) 1,400,000

- Center’s for Disease Control TBI Mortality & Morbidity (CDC January 2006)
 - At least 1.4 million sustain a TBI annually
 - Of them 50,000 die
 - 235,000 are hospitalized
 - 1.1 million are treated and released from hospital emergency rooms
 - 475,000 TBI’s occur among children ages 0-14
 - Adults age 75 years and older have the highest rates of TBI related hospitalizations and deaths
 - Males are 1.5 times more likely to sustain a TBI than are females
 - African Americans have the highest death rate
 - Number of people with TBI’s, who receive no care, is unknown
 - This does not include acquired brain injury. If it did, the numbers would double. (Stroke/Cerebral Vascular Accidents, Anoxia, Disease (encephalitis-meningitis), Metabolic, Toxic exposure or Tumors)
 - An est. 80 to 90,000 people experience permanent disability from TBI’s
 - Nationally 5.3 million people are currently living with TBI related disability and are unable to independently perform ADL’s (2% of the nation’s population)

- Leading Causes Of Brain Injury (Brain Injury of America 2007)
 - Falls 21%
 - Motor vehicle accident 50%
 - Fire arms 12%
 - Sports and recreations 10%
 - Other 7% which includes assaults

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- Cost of TBI (CDC 1995)
 - Direct medical and indirect costs are estimated at \$56.3 billion

Military Mortality & Morbidity: (Congressional Record 7/23/07)

- 3,628 dead
- 26,806 seriously wounded
- 20% of those seriously wounded have brain and spinal cord injuries
- 30% of those seriously wounded develop mental health problems within 3 month of discharge.
- 2121 cases of TBI were formally diagnosed by the military between Oct. 2001 and Jan 2007
- As of July 25, 2007, the President's Commission on Care for America's returning Warriors reports 2,726 severe TBI cases
- This number may be much higher
- The VA estimates 7500 Veterans have undiagnosed TBI's and an additional 2000 are currently receiving some level of TBI care

Military's Goal: (Discover, July 2007)

- To return Soldiers to active duty or to make an optimal return to civilian life

Protective Equipment and The Consequences of War: (American Trauma Society)

- Great strides have been made by the military with protective gear
- Kevlar helmets and body armor have significantly reduced penetrating wounds within the core body
- Limbs, however are susceptible to penetrating wounds & traumatic amputation
- This protection has little benefit, when hit by a Blast Injury. "Body armor prevents death, not damage" (USA Today March 4-6, 2005)

Military's Medical Response: (Discover, July 2007 & Dead Men Walking by Michael Mason)

- Is the most sophisticated trauma care in history
- Within hours of injury, a Soldier can be med-evac'd to a state of the art frontline hospital, where they are stabilized
- They are then placed on a flying intensive care unit (ICU), where they receive continuous critical care
- During Viet Nam it took 15 days to do what the military can do in 13 hours today
- Soldiers treated at Balad Air Force Base (Front Line) stand a 96% chance of surviving (this is unprecedented!)
- They are then transported to Ramstein Air Force base in Germany and then to Walter Reed or Bethesda

- The next step is treatment at one of four Poly-trauma Centers (Tampa, FL; Richmond, VA; Minneapolis, MN; and Palo Alto, CA)

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- There are an additional 17 designated Poly-trauma rehab sites designed to continue treatment, rehabilitation and bring our injured personnel closer to their families
 - Boston MA; Syracuse NY; Bronx NY; Philadelphia PA; Washington DC; Augusta GA; Lexington KY; Cleveland OH; Indianapolis IN; Hines IL; St. Louis MO; Houston TX; Dallas TX; Tucson AZ; Denver CO; Seattle WA; W Los Angeles CA
 - As of April 2007, the VA reported, they had treated over 350 Operation Enduring Freedom and Operation Iraqi Freedom Service members in their inpatient units
 - Our severely injured military are not home yet!
 - They are still in acute rehabilitation
 - This war has produced more disabled soldiers than ever before.
 - Some surviving with only their brain stems unimpaired
- **Hallmark Injury of the War is the Blast or Barometric Wave Injury** (March 2007 letter to House Appropriations Committee from Rep. Bill Pascrell (D-NJ) and Rep. Todd Platts (R-PA), both co-chairs of the Congressional Brain Injury Task Force)
- Blast from Improvised Explosive Devices (IED's)
 - Rocket Propelled Grenades
 - Land Mines
 - Mortar Artillery Shells
- **Anatomy of a Blast Wave:** (American Trauma Society/Discover, July 2007, (CDC))
- Blast Wave related injuries are the primary source of closed TBI's
 - The blast incinerates air around it, sprays metal, burns flesh
 - A high-pressure wave engulfs the human body at 2 times the speed of sound physically rattling and whip lashing the brain within the skull
 - Huge volumes of displaced air flood back into the exploded area, generating a second reverberatory wave with nearly equal force and then it vanishes
 - Portions of the brain swell and decompresses almost instantly causing a variety of problems at the cellular level
 - Bubbles appear in the brain's blood stream and directly affect the survival of neurons and neuronal connections
 - Additionally, the heart slows, eardrums burst, eyes, lungs, abdomen, renal and circulatory systems are often seriously affected
 - Shrapnel and gravel may also penetrate the skull and ping-pong within the cranial wall
 - The blast force then blows the individual against the roof or wall causing further blunt head trauma
 - The brain responds by releasing a metabolic cascade of neuro-chemicals, which have a toxic effect on brain tissue
 - This damage is at this time minimally treatable through standard medical strategies, which normally target bleeding and swelling

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- Given the Military's excellent medical trauma capability, a soldier can survive without a penetrating wound and still have the worst diagnosis of TBI

- **Extreme TBI Is Not The Only Problem Facing Our Returning Soldiers**
 - "Mild Brain Injury" presents a whole new realm of difficulties
 - The Department of Defense (DOD) is not screening discharging military personnel on a large scale

- **Mild Brain Injury Presents As:** (Textbook of Traumatic brain Injury by Silver, McAllister and Yudofsky)
 - Physical
 - Fatigue
 - Headache
 - Dizziness
 - Sexual issues
 - Vision problems
 - Hearing difficulties
 - Sensory and metabolic disturbances
 - Gross and fine motor difficulties (balance)
 - Seizures

- **Mental**
 - Attention and concentration
 - Initiation difficulties (lethargy, depression)
 - Memory difficulties (especially short term)
 - Reasoning, planning, multi-tasking and understanding
 - Speech and language difficulties
 - Academic performance issues

- **Emotional**
 - Post injury reactions
 - Mood and behavior disorders
 - Psychiatric disorders
 - Grieving and guilt

- **Distress responses** which may be physical or emotional
 - Sleep difficulties (falling asleep, staying awake, waking early)
 - Restlessness (jittery, fidgety, high degree of nervousness)
 - Overly watchful or hyper-vigilant (overly sensitive or anticipatory about environmental things such as (noise, sound, light
 - Social withdrawal (avoiding family or friends, wanting to be alone

- **High Risk Behaviors**
 - Excessive Alcohol use
 - Illicit drug use
 - Reckless driving

- **Serious Problems**
 - Explosive anger
 - Threatening
 - Violence

- **Post Traumatic Stress Disorder**
 - Nightmares, flashbacks, unsettling memories of trauma
 - And all the symptoms mentioned in Distress Response
 - Differential diagnosis for TBI and PTSD
 - (Note: Anyone with a TBI can also suffer from PTSD)

- **Depression**
 - Deep unchanging prolonged and painful sadness that doesn't respond to attempts to help a person cheer up
 - Changes in appetite, sleep, concentration, pleasurable activities
 - Loss of a sense of wellness and self esteem

- **Return to Civilian Life Moving Veterans Beyond the DOD/VA Systems**
(Marilyn Spivack, Founder of the BIA of America)
 - Many States don't have a single brain injury rehabilitation center
 - Of the states offering some level of TBI treatment, few actually provide enough assistance to obtain even the most basic level of specialized care.
 - Few families have insurance coverage that will pay for treatment and fewer can pay privately
 - As recently as mid-July 2006, the VA Office of the Inspector General admitted that patients and families were dealing with major inadequacies
 - The reality is, fundamental levels of care are absent in most states
 - The military did not anticipate the magnitude and demand for service
 - The VA and DOD are now scrambling to add new brain injury programs and services
 - Problems encountered to date are:
 - Inadequate or absent communication with case managers
 - Lack of follow-up care
 - Being forced to pay out of pocket for necessary treatment and medication
 - Institute of Medicine concluded that:
 - "Finding needed services is an overwhelming logistical, financial and psychological challenge"

- “The quality and coordination of post acute TBI Service systems remains inadequate”
- **New Hampshire’s Unique Continuum of Care**
 - NH has a continuum of Acute, Sub-acute and Post-acute Brain Injury facilities
 - Providers know and respect one another
 - There is some overlap in services, however this creates a health competitiveness
 - Each Program is part of a continuum and corridor of care designed for the benefit of the person who sustained the brain injury
 - New Hampshire’s brain injury association is one of the most active in the country, offering a variety of prevention, education and advocacy services
 - New Hampshire has an excellent system of contracted non- profit Area Agencies; each designed to maximize statewide service delivery
 - New Hampshire is well positioned to partner with the VA and this is absolutely essential if we are to serve our returning veterans with top quality rehabilitation at each level of service delivery
- People with Significant TBI’s are not yet returning to NH communities
 - They are still receiving medical and rehabilitative services in the Poly Trauma System
 - It will likely be 6 to 12 months before they start returning
 - This is evidenced by the VA’s report that they have treated approximately 350 service members in their inpatient units to date
- Service members with mild brain injuries have been returning home
 - It is estimated that 35,000 returnees, believed to be healthy, were screened.
 - The results showed 10 – 20% had experienced a mild TBI during deployment
 - The DOD is just now beginning to expand testing for mild brain trauma
 - Reassessment was administered to service member 90 to 120 days after returning.
 - Results: 38% of soldiers and 31% of Marines reported psychological symptoms, including those related to TBI
 - It should be noted, this is a small number of returnees
 - The testing is basic with a focus on memory, attention & concentration and the testing needs to be expanded to every service person

Closing Points:

- 1) I work for Robin Hill Farm, a brain injury specific residential treatment and rehabilitation provider with a 22 year history of VA contracting
 - At any point in time, we have 8-10 Veterans with us, who were injured, while on active military duty

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- They receive their Medical Care from VA's in Manchester, White River Junction and Boston
 - They receive their Case Management from Manchester

 - I can personally attest to the excellence of their medical care and the terrific follow through provided by their Case Mangers
 - In our experience, the VA is doing an outstanding job
 - The Media is quick to pick up on the trouble spots and tends to overlook the wonderful work being done
- 2) But for a moment in time, Disabled Veterans were just like you or me
- They had their dreams, careers, families and now their lives have changed
 - They will live with lifelong disability and they're coming home
 - They deserve the best medical care, rehabilitative services, family supports and equally important, a welcome and acceptance back to their community
 - I'd take a moment to thank the people of Peterborough
You have two significant brain injury facilities in your backyard. The people of Peterborough have made a wonderful effort to include people with disabilities into the community. You offer employment, open their businesses, make available opportunities in the Arts and provide accessibility. People are not integrated into Peterborough. They are "Included". There's nothing better than that....

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