VHA Polytrauma / TBI Initiatives

Institute of Medicine
Washington DC
August 9, 2007

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Physical Medicine and Rehabilitation
Polytrauma / TBI
System of Care
Polytrauma / TBI Continuum of Care

**Acute/Trauma Care**

- Inpatient Acute
- Inpatient Subacute
- Inpatient Awakening
- Outpatient Evaluation and Management

**Acute Rehabilitation**

- Transitional/Community
- Re-entry – *Residential*
- Transitional/Community
- Re-entry - *Day Program*
- Outpatient
- Neurobehavioral

**Post Acute Rehabilitation**

- --Supported Living
- --Vocational
- --Educational
- --Day Activity
- --Support Groups
- --Skilled Nursing
- --Total Care
- --Outpatient follow-up

**Surgical**

**Medical**

**Family Support**

**Case Management**

**Benefits Management**

**Records Management**
Polytrauma / TBI System of Care

- Polytrauma Rehabilitation Centers (PRC)
- Polytrauma Network Sites (PNS)
- Polytrauma Support Clinic Teams (PSCT)
- Polytrauma Point of Contact (PPOC)
- Case Management
- Family Support
- Integrated Communication System
- Community Reintegration
- Long Term Follow-up
Lessons Learned at the PRCs

- Clinical Differences
  - Higher medical acuity
  - More severely injured
  - Multiple co-morbidities
  - PTSD and/or other mental health problems
  - Pain
  - Infection
  - Increased length of stay
Common Sequelae of Blast Injury

- Brain Injury
- Amputation
- Fractures
- Wounds
- Psychological-PTSD
- Crush Injuries
- Burns
- Auditory/Vestibular

- Eye, Orbit, Face,
- Dental
- Renal
- Respiratory
- Cardiac and Vascular
- Gastrointestinal
- Pain
- Peripheral Nerve
Lessons Learned at the PRCs

• Family Care
  • More intense and different quality involvement
  • High expectations
  • Heavy emotional impact
  • Need:
    • Support / Therapy
    • Education
    • Resources
Cultural Transformation
New Generation

- Age appropriate
- Military identity
- Recognition of service
- Family stress
- Family configuration
- Family friendly environment
- Family inclusion and support

- Visiting hours
- Meaningful activities
- Emotional component
- Developmental stage and social role
- Sexuality
- Case Management
- Prolonged recovery
PRC Scope of Clinical Services

- Comprehensive Interdisciplinary Inpatient Evaluations
- Acute Comprehensive Inpatient Rehabilitation
- Transitional Community Re-entry Program
- Emerging Consciousness Program
- Ongoing Follow-up and Case Management
Interdisciplinary Rehabilitation Team

- Physiatrist (physician that directs the medical care)
- Rehabilitation Nursing
- Speech Language Pathology
- Occupational Therapy
- Physical Therapy
- Therapeutic Recreation Specialist
- Blind Rehabilitation Specialist
- Counseling Psychology
- Neuropsychology
- Social Work/Case Manager
- Prosthetist/Orthotist
Team of Specialized Consultants

- Anesthesiology
- Audiology
- Chaplin Services
- Dentistry
- Driver Rehabilitation
- Gastroenterology
- General Surgery
- Infectious Disease
- Medicine
- Neurology
- Neuro-ophthalmology
- Neurosurgery
- Nutritionist
- Optometry
- Oral and Maxillofacial Surgery
- Orthopedics
- Otolaryngology
- Pharmacy
- Plastic Surgery
- Prosthetics
- Pulmonology
- Radiology
- Urology
- VBA Vocational Specialist
Rehabilitation interventions for *Emerging Consciousness* following severe TBI
Challenges

- Family burden & stress
- Cognitive recovery slow
- High medical acuity - Polytrauma
- Great need of resources
- Long term disability
- Paucity of research
Goals

1. To provide the necessary interdisciplinary medical, nursing, and rehabilitation program and services to:
2. Optimize long term functional outcomes after severe brain injury
3. Improve responsiveness/ Return to consciousness (RTC)
4. Facilitate advancement to the next phase of rehabilitation care
Medical Management

Minimize barriers to consciousness

- Taper potentially sedating medications
- Treat acute medical problems and decrease metabolic costs
- Head CT & EEG

Pharmacologic stimulation
Sensory Stimulation Programming

- Daily stimulation including both:
  - Individualized/Structured stimulation program
    - Minimum 2 hours with appropriate rest breaks
    - Across sensory domains
      - Social Knowledge
      - Taste & Swallowing
      - Olfactory
      - Propriocetive & Vestibular
      - Tactile
      - Auditory
      - Visual
  - Environmental regulation
    - Activities at the facility, trips outside for fresh air, TV/video/radio, conversations, books on tape, etc
Family Centered Programming

Health information
- Family needs assessment – military
  - Beliefs & understanding of situation
  - Coping strengths
  - Family dynamic
- Education plan
  - Enhance knowledge of stimulation benefits, regulation & prognostics

- Emotional support
  - Supportive counseling
  - Encourage respite
  - Spiritual support
Family Centered Programming

- Logistical support
  - Housing
  - Transportation
  - Nutrition
- Involvement in care
  - Training for participation in stimulation programming
  - Incorporate observations
  - Participants in goal setting
PSC
Transitional Living Programs
Rationale for Transitional Care

- Acute care LOS is insufficient for maximum benefit from rehabilitation
- D/C to home with OP therapy
  - Large gap between skills taught in most OP clinics and skills needed to live in the community
- Transitional tx centers are appropriate for
  - Pts who need intensive training to acquire community living skills
  - Pts who cannot live at home or do not have access to post-acute day programs in their communities.
Goal of Transitional Rehabilitation Programs

Translate rehabilitation techniques and strategies from the acute rehabilitation setting to the community.
Scope of Services

- Cognitive Rehabilitation
- Health & Wellness
- Psychosocial Services
- Emotional/Neurobehavioral Services
- Medical/Psychiatric Services
- Living Skills
- Community Reintegration
PNS Scope of Clinical Services

- Provide specialized interdisciplinary post-acute rehabilitation services; inpatient and outpatient
- Manage new polytrauma patients in consultation with PRC
- Identify resources for VA and non-VA care across the VISN
- Provide proactive clinical and psychosocial case management; continued support for families
- Provide regular follow-up care, check-ups
- Coordinate services between VHA, VBA, DOD, private sector (fee-basis)
## Experience to Date

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<tr>
<td>PRC</td>
<td>436</td>
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<tr>
<td>PNS</td>
<td>1589</td>
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# Injured in Theatre

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<td>Iraq</td>
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<tr>
<td>Afghanistan</td>
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<td>Other</td>
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## Branch of Service

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<th>Percentage</th>
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<td>Army</td>
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<tr>
<td>Marines</td>
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<tr>
<td>Navy</td>
<td>7%</td>
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<td>Air Force</td>
<td>3%</td>
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### Major Impairments PRC

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Brain</td>
<td>94.3%</td>
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<tr>
<td>Fracture</td>
<td>36.5%</td>
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<tr>
<td>Wounds</td>
<td>15.8%</td>
</tr>
<tr>
<td>Eye</td>
<td>14.2%</td>
</tr>
<tr>
<td>Ear</td>
<td>8%</td>
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<tr>
<td>Peripheral Nerve</td>
<td>6.0%</td>
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## Demographics

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<thead>
<tr>
<th>Gender</th>
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<tbody>
<tr>
<td>Male</td>
<td>97%</td>
</tr>
<tr>
<td>Female</td>
<td>3%</td>
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<table>
<thead>
<tr>
<th>Age</th>
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<tbody>
<tr>
<td>Average</td>
<td>28</td>
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<tr>
<td>Range</td>
<td>18-59</td>
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<tr>
<td>Referral Sources</td>
<td>Percentage</td>
</tr>
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<tr>
<td>WRAMC</td>
<td>39.3%</td>
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<tr>
<td>National Naval</td>
<td>34.0%</td>
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<tr>
<td>Other MTF</td>
<td>14.9%</td>
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<tr>
<td>VA</td>
<td>5.1%</td>
</tr>
<tr>
<td>Civilian</td>
<td>4.4%</td>
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<tr>
<td>Brooke AMC</td>
<td>2.3%</td>
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## Discharge Destination

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<th>Percentage</th>
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<tr>
<td>Home/Home VA</td>
<td>68.1%</td>
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<tr>
<td>MTF</td>
<td>25.9%</td>
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<tr>
<td>Private Treatment Facility</td>
<td>6.0%</td>
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PSCT Scope of Clinical Services

- Located closer to home community
- Partner with Polytrauma Network Site
- Routine follow-up of stable sequelae
- Assist with initial evaluation of outpatient referrals for polytrauma and TBI
Polytrauma Point of Contact (PPOC)

- Point of contact at every VA facility not otherwise designated
- Knowledgeable about polytrauma system of care
- Responsibility for triage and referral to most appropriate facility based on expertise and location.
VA TBI/Polytrauma Life Time Case Management

- Clinical Case Management- Certified Rehabilitation RN
- Psychosocial Case Management- Licensed Clinical Social Worker
- Monitor the implementation of the care plan
- Assess for new emerging issues
- Identify VA and non-VA resources
- Provide ongoing patient and family support
- Educate patient and family
- Assist with military to VA transition
Family Program

- Emotional Support
- Logistical Support
- Professional Support
- Military Liaison
- Care Involvement
- Health Information
Integrated Communication System

- Polytrauma Telehealth Network
- Electronic Record System
- Read-only access to military computerized health records
- Full record scanned and digitally transmitted
- JPTA / VTA
- Warm hand off
- VA staff at MTF / Uniformed SM at VA
Community Re-integration

- Care for those who can’t return home
- Supportive services in the home
- Support for the care giver
- Day activity
- Vocational Rehabilitation
- Return to school
- Compensated work therapy
- Collaboration with civilian section for episodic care for subsection of veterans
- Transitional Rehabilitation
- Outpatient Rehabilitation
Long Term Follow-Up

- Sequelea are life long/require special expertise
- Emerging complications
- Changes in developmental stage
- Changes in social situation
- New treatments or technology
- Support and connectivity
- Aging with disability
- Scheduled and as needed (patients and families may not always be proactive)
VHA Rehabilitation Database: Functional Status Outcomes Database (FSOD)

- Demographics
- Functional Improvement Measure (FIM)
- Data can be entered across the continuum
- Recently modified to identify polytrauma, military status, injury agent
- Data can be entered from any clinical setting
Screening and Evaluation of Possible TBI in OEF/OIF Veterans
Many of those returning from current conflicts had experiences that put them at risk for TBI. Mild symptoms of TBI may be difficult to recognize, or confused with other conditions. Treatment of symptoms may be very different for TBI patients. Unrecognized TBI may lead to loss of job, loss of social role, loss of potential productivity.
**Approach**

- Currently no validated screening instruments accepted for clinical use
- Reviewed
  - Research on TBI screening (limited)
  - Results from individual MTF’s and VAMC’s that initiated screening locally
  - Clinical presentation and natural history of TBI
- Consulted with Defense and Veterans Brain Injury Center (DVBIC)
Screening Instrument Developed

- 4 sections:
  - *Events* that increase risk of TBI
  - *Immediate symptoms* following event
  - *New or worsening symptoms* following event
  - *Current symptoms*

- Patients must respond positively to all 4 sections to screen positive
1. During any of your OIF/OEF deployment(s) did you experience any of the following events?

(Check all that apply)

☐ Blast or Explosion
☐ Vehicular accident/crash (any vehicle, including aircraft)
☐ Fragment wound or bullet wound above the shoulders
☐ Fall
2. Did you have any of these IMMEDIATELY afterwards?

(Check all that apply)

- Losing consciousness/”knocked out”
- Being dazed, confused or “seeing stars”
- Not remembering the event
- Concussion
- Head injury
3. Did any of the following problems begin or get worse afterwards?

(Check all that apply)

- Memory problems or lapses
- Balance problems or dizziness
- Sensitivity to bright light
- Irritability
- Headache
- Sleep problems
4. In the past week, have you had any of the symptoms from Section 3?

(Check all that apply)

☐ Memory problems or lapses
☐ Balance problems or dizziness
☐ Sensitivity to bright light
☐ Irritability
☐ Headaches
☐ Sleep problems
Clinical Reminder

- Clinical Reminder developed alerting clinician to screening instrument
- Utilized in all setting where OEF/OIF veteran presents for care
- Process
  - Determines if OEF/OIF veteran
  - Completes screen
  - Generates consult if positive
OIF/OEF Clinical Reminder
Traumatic Brain Injury Screen

Positive Screen
- Consult Generated to TBI Specialty Team (PSCT, PNS) / Polytrauma POC Notified
- Second Level Evaluation
  - Complete HPI
  - Focused ROS
  - Targeted PE
- Diagnosis Confirmed
  - Individualized Treatment Plan per Algorithm
    - Treatment Successful/Symptoms Resolve
      - Maintain Contact “Open door for return”
    - Treatment Unsuccessful/Symptoms not unresolving or worsening

Negative Screen
- Provide education and open door
- Diagnosis not Confirmed
  - Results of Evaluation Reported to Referring Provider by Consult Completion
    - Refer to PNS
    - Treatment Unsuccessful/Symptoms not resolving or worsening
      - Refer to PRC
Neurobehavioral Symptom Inventory

- Describes 22 common complaints of individuals with mTBI and PCS
- Validated for mTBI
- Utilized after positive screen to identify common symptoms in structured interview

*Cicerone: J Head Trauma Rehabil 1995;10(3):1-17*
# Neurobehavioral Symptom Inventory

- Dizziness
- Loss of Balance
- Poor coordination
- Headaches
- Nausea
- Visual disturbance
- Light sensitivity
- Hearing difficulty
- Noise sensitivity
- Body/extremity numbness
- Altered taste or smell
- Appetite change
- Poor concentration
- Forgetfulness
- Difficulty making decisions
- Slowed thinking
- Fatigue
- Insomnia
- Feeling anxious
- Feeling depressed
- Easily irritated
- Poor frustration tolerance

*Cicerone: J Head Tr Rehabil 1995;10(3):1-17*
PCS Management Algorithms

- The *VHA Polytrauma PCS Management Algorithms* outline the recommended Assessment, Treatment, and Follow-Up for each symptom complex.

- Many of the NSI symptoms have a significant overlap in the needed *assessment, treatment and follow-up* recommendations, therefore the algorithms provide a streamlined presentation.
Screening and Evaluation
Clinical Tracking

- Initiated in all VHA clinical settings April 2, 2007
- Screening tool generates health factors for each question
- Computerized record template for follow up evaluation to be deployed
Questions?