Addressing the Complex Brain Injury Survivor

A Bridge to the Community

Scott Peters, MS, OTR/L
Clinical Director, Neurorehabilitation and Neurobehavioral Programs
Presentation Outline

1. Define complexity through review of co-occurring disorders
2. Discuss integrated treatment programming concepts
3. Introduce stage-based treatment approaches for short term programming
4. Discuss integrated treatment programming within each treatment phase
5. Propose general readiness criteria for discharge
Who is the Complex Brain Injury Survivor?

• Each person is unique
  ▪ Pre injury history, personality, etc.

• All brain injuries are not the same
  ▪ Location of injury
  ▪ Extent and severity of injury
    • Mild, Moderate and Severe
  ▪ The impact on the individual

• The presence of co–occurring disorders
TBI and Other Co-Occurring Disorders

• Complex Medical Issues
• Complex Behavioral Issues
• Substance Misuse and Abuse
• Chronic Pain
• Psychiatric Disorders
• Personality Disorders
• Vestibular Impairment
“Integrated” Treatment Models

(Watkins, et al, 2005)

• May be defined as interorganizational linkages and referrals

• May also include co-location of mental health and substance abuse services or provision of both types of services at the primary treatment site

• May be defined as a unified treatment program in which staff is cross-trained and substance abuse and mental health providers share the same chart
Cardinal Features of TBI

1. Cognitive/Communication Changes
   - Attention/Concentration
   - Memory
   - Executive Functioning
2. Mood/Behavioral Changes
   - Depression / Anxiety
   - Irritability
3. Awareness Deficit

* Will influence rehabilitation efforts
Mood Disorders - Depression

Reported frequency of depressive disorders has been reported from 6% to 77% (Levin and Grossman 1978; Rutherford et al. 1997; Varney et al. 1987)

More recent studies:

Hibbard et al. 1998: 61%
Kruetzer et al. 2001: 42%
Koponen et al. 2002: 26%
## Suicide Following TBI
*(Teasdale et al. 2001)*

<table>
<thead>
<tr>
<th>Type of Injury</th>
<th>Mortality Rate Compared to the General Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concussion</td>
<td>3.0 times the rate</td>
</tr>
<tr>
<td>(N = 126,114)</td>
<td></td>
</tr>
<tr>
<td>Cranial Fracture</td>
<td>2.7 times the rate</td>
</tr>
<tr>
<td>(N = 7,650)</td>
<td></td>
</tr>
<tr>
<td>Cerebral Contusion or Traumatic Hemorrhage</td>
<td>4.1 times the rate</td>
</tr>
<tr>
<td>(N = 11,766)</td>
<td></td>
</tr>
</tbody>
</table>
Aggressive Disorders:

• 35% to 96% of individuals with brain injury exhibit agitated behavior during the acute recovery period (Levin and Grossman, 1978)

• In a study of 89 patients assessed within 6 months after TBI, 33.7% of individuals had aggressive behavior compared to 11.5% of those with multiple trauma but without TBI (Tateno, et al 2003)

• In a series of 67 patients admitted with mild to moderate TBI restlessness occurred in 40% and agitation in 19% (van der Naalt et al. 2000)
TBI and Pain
(Brain Neurotrauma: Chronic Pain in Neurotrauma 2015)

- Post traumatic headache pain 59%
  (Nampiaparampil, 2008)
- Muscle Spasticity (Sherman, et al 2006)
- Low Back Pain 46%
- Extremity Pains 39%
- Complex Regional Pain Syndrome 12%
- Heterotrophic Ossification 11%
- Peripheral Neuropathies 10%
Definition of Terms: Awareness Deficits

Anosagnosia (Flashman and McAllister, 2002)

- A lack of knowledge about a deficit. Usually used to describe an apparent loss of recognition or awareness following an abrupt brain insult. Currently used to describe the frank denial of a neurological deficit. It is often used to refer to the inability to truly recognize one’s strengths and deficits following a TBI.
Prevalence of Awareness Deficits in TBI Populations

- Up to 45% of individuals with moderate to severe TBI demonstrate awareness deficits (Fishman and McAllister, 2002)

- In a study of 66 post acute TBI patients, Sherer, et al, found that, depending on the method of measurement, 76% to 97% of showed some degree of impaired self awareness.
Brief Review

• Complexity Described
• Co-Occurring Disorders Concept Introduced
• Co-Occurring Program Concepts Reviewed
• Cardinal TBI Features Proposed

Next Steps:
• Introduce Case Review
• Short Term Programming Phases and Community Readiness
• Assessment
Case Study

• 40 year old divorced woman who was referred to ReMed after being admitted to an inpatient psychiatric unit
• Witnessed fall while at work sustaining a concussion with loss of consciousness “for a few minutes”
• History of three reported concussions in prior two years
• History of anxiety and depression with two prior suicide attempts with overdose of prescribed medications
• Admitted to emergency department she underwent a chest x-ray, CT scan, cardiac labs and an EKG. All diagnostics were determined to be negative. Discharged to home.
**Case Study**

- Readmitted to emergency department following a syncopal episode while at cardiology appointment in the community. Discharged to home.
- Began working with outpatient concussion program consisting of physician, OT and PT
- Symptoms persisting included lightheadedness, blurred vision, photophobia and phonophobia, neck pain, headache pain, anxiety, depression, cognitive impairments including decreased memory and diminished information processing skills
- Took herself back to ED where she was then admitted to inpatient psychiatric unit
- Approved to admit to ReMed for 90 days
Short Term Programming Phases

1. Assessment Phase
   • Medical
   • Clinical
   • Observational

2. Stabilization Phase
   • Prioritization
   • Integrated Programming

3. Generalization Phase
   • Community Reentry
   • Self – Directed / Other Directed
Readiness for the Community

1. Medical Stability
   - Medical Conditions are manageable
   - Intermittent monitoring
   - Takes medications as prescribed

2. Behavioral / Emotional Stability

3. Residential Safety
   - Self Care
   - Safety in the home (can they be left alone?)
   - Spending (access to internet)

4. Community Safety
   - Transportation
   - Pedestrian Safety
   - Social Judgment / Consumer Judgment / Social Pragmatics

5. Stable Activity Pattern

6. Commitment to Sobriety
Standard Assessment Phase

Assessment Begins at Preadmission

1. Medical
   - Psychiatry, Neuropsychiatry, Neurology, Internal Medicine

2. Clinical
   - PT, OT, ST, Neuropsychology, Psychology, Behavior Analysis, Recreational Therapy

3. Functional Observation
   - Behavior, Sleep, Pain, Self Care, Social, Physical
**Specialized Assessments**

- Comprehensive Medication Assessment
- Behavior Analysis
- Neuropsychological Assessment
  - Self Awareness
- Swallowing Assessment
- Comprehensive Pain Assessment
- Vestibular Assessment
- Substance Abuse Assessment
Comprehensive Medication Assessment

- Conducted by medical specialty areas including physiatry, neuropsychiatry, neurology, internal medicine, specialists (facilitated by case management team)
- Informed by prior medication history
- Informed by family interview
- Informed by current clinical and daily observational data
- Areas include: spasticity, pain, sleep, mood, behavior, incontinence, etc.
Behavior Analysis: Functional Assessment

- Understand purpose (function) of behavior.
- Gather information through a variety of objective and subjective methods (i.e. activities, settings, people, etc...)
  - ABC Data Form
- Formulate hypothesis of what occasions and maintains the behavior
  - Possible Functions
    - Positive reinforcement
    - Negative Reinforcement
    - Automatic Reinforcement
Neuropsychological Assessment

- Conducted by a Clinical Psychologist trained in assessment who is also treating
- Standardized tests selected based on presenting factors
  - Time post injury
  - Suspected area of concern
    - Frontal Systems Behavior Scale (FrSBe)
  - Suspected influencing variables (personality, malingering)
- Self Awareness Scales
  - Neuropsychological Impairment Scale (NIS)
Pain Assessment

• Comprehensive Evaluation Elements
  ▪ Additional diagnostics to clarify pain sources
  ▪ Pain medication history
  ▪ Labs / UDS findings
  ▪ Therapy assessments with specific additional components
    • Nursing Assessment
    • Initial Physical Therapy Evaluation
    • Function – Based Pain Scale
    • ReMed’s Observational Pain Scale
Pain Assessment

• Psychology Assessment to include:
  ▪ Neuropsychological Evaluation
  ▪ MMPI – 2
  ▪ Beck Depression Inventory
  ▪ Beck Anxiety Inventory
  ▪ Pain Catastrophizing Scale
  ▪ Chronic Pain Acceptance Questionnaire
  ▪ Measure of Kinesthesiphobia (fear of movement)
  ▪ Family Interview
Vestibular Assessment

Vestibular Function Tests
• Electronystagmography
• Posturography
• Rotary Chair

Clinical Assessment
• Ocular motion and gaze stability
• Sensory organization
• BPPV
• Motion sensitivity
• Postural stability and balance reactions
Substance Abuse Assessment

• Substance Abuse History (legal, financial, etc)
• Current Pattern of Use (confirmed by labs and family corroboration)
• Frontal Systems Behavior Scale (FrSBe)
• Beck Depression Inventory
• Beck Anxiety Inventory
• Behavior Change Inventory (motivational interviewing)
Motivational Interviewing

Stages of Change

• Precontemplation: hasn’t considered it!

• Contemplation: ambivalence/ accepts and rejects change and effects

• Preparation/Determination: considers various strategies

• Action Stage: engaged in actions

• Maintenance: striving to sustain changes

• Relapse: minor or major, seen as “normal” part of change process
Brief Review

• Assessment Phase
• Discussed Specialty Assessments including:
  ▪ Comprehensive Medication Assessment
  ▪ Behavior Analysis
  ▪ Neuropsychological Evaluation (Awareness Assessment)
  ▪ Comprehensive Pain Assessment
  ▪ Vestibular Assessment
  ▪ Substance Abuse Assessment
• Next Step
  ▪ Case Review Update
  ▪ Stabilization Phase (Integrated Treatment Approaches)
Case Study

• Skin Rashes
• Persistent headaches
• Insomnia
• Anxiety and Depression
• Orthostatic Hypotension
• Cervical and Back Pain
• Vestibular Symptoms: dizziness and decreased vestibular – ocular motion and motion sensitivity
• Routinely overwhelmed, routine state of fight or flight
Treatment Philosophy: 
Keys to Stability & Success

Establish Medical Stability

Promote Behavior / Emotional Stability & Optimize Cognition

Develop Stable Activity Plan

Integrated & Comprehensive
Counseling Approaches

Traditional
• Provide Education
  ▪ Verbal
  ▪ Written Materials
• Insight-based Counseling
• Expectation for follow through

Adapted
• Modify verbal information complexity, rate and terminology
• Modify written materials
• Provide notes
• Establish place for storage of materials to facilitate easy access
• Repetition
• Discovery Approaches
• Respect Pace
General Stabilization Efforts

• Medical
  ▪ Incontinence, medications, sleep, nutrition

• Cognitive/communication
  ▪ Structure and remediation

• Mood/Emotional
  ▪ Coping skills

• Behavioral
  ▪ Replacement skills

• Functional
  ▪ Activities of daily living

• Community
  ▪ Community probes
Rehabilitation Change Can Occur in the Presence of Two Essential Elements

• Motivation
  ▪ Have I made the decision to make the necessary changes in my life?
  ▪ What is influencing my willingness to change?
  ▪ How does the treatment team motivate the client to want to change?

• Skills
  ▪ Do I have the skills required to implement these changes?
  ▪ What are the skills that I need to acquire?
  ▪ How can I best learn these new skills?
Behavior Programming

• Antecedent-based interventions
  ▪ Cueing & prompting
  ▪ Environmental alterations

• Consequence-based interventions
  ▪ Reinforcement
    • Always used first
    • Consider both positive and negative Reinforcement

  ▪ Punishment
    • Last resort, only when necessary because of safety or risk and always paired with reinforcement
    • Negative Punishment used exclusively
Awareness Programming: The Awareness Pyramid
(Crosson et al, 1989)
Pain Programming
Stabilization with Shift towards Function

• Medication trials with efforts to minimize use of narcotic pain agents
• Continue manual therapy with introduction of home exercise use of modality and pacing program
• Facilitate acceptance of residual pain and shift to improved functional activity
• Facilitate stabilization of sleep, mood, diet, etc
• Incorporate all features into a comprehensive wellness plan (written individualized manual)
Cornerstones of Pain Treatment

- Medication management
- Normalized sleep cycle
- Structured schedule and activity pattern
- Modalities to manage pain
- Stress reduction
- Exercise
- Education
Vestibular Programming

• Vestibular ocular exercises

• Habituation exercises

• Canalith repositioning technique

• Balance exercises

• Compensation strategies

• Desensitization to environmental stimuli
**Substance Abuse Programming**

**Motivational Interviewing**

<table>
<thead>
<tr>
<th>Client Stage</th>
<th>Treatment Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Contemplation</td>
<td>Motivational Tasks</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Raise doubt /Tip</td>
</tr>
<tr>
<td>Preparation</td>
<td>Best course of action</td>
</tr>
<tr>
<td>Action</td>
<td>Take steps toward change</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Prevent Relapse</td>
</tr>
</tbody>
</table>
“Recovery Work”

- Written assignments (journal, life history)
- Recovery readings (big book, NA book)
- Fellowship meetings (processing)
- Sponsor
- Development of relapse prevention skills
- “Working the plan”
- Generalization to the community
Brief Review

• Stabilization Phase
• Discussed Specialty Stabilization Phase Treatment Philosophies including:
  ▪ Behavior Programming
  ▪ Awareness Building
  ▪ Comprehensive Pain Treatment
  ▪ Vestibular Treatment
  ▪ Substance Abuse Treatment
• Next Step
  ▪ Case Review Update
  ▪ Generalization Phase (Integrated Treatment Approaches)
Case Study

- **Headache and Neck Pain**: Topamax and Ibuprophen PRN
  - Cervicogenic pain: stretching, strengthening, positioning, pacing
- **Mood**: Tegretal; Zoloft; Seroquel
  - Crisis management, stress management, interceptive desensitization, and relaxation training.
- **Insomnia**: address mood
  - Sleep hygiene to include stretching and proper positioning
- **Dizziness / Sensory Overwhelm**: individual physical therapy
  - Visual / Vestibular Integration Exercises
- **Cognition**: cognitive rehab to address memory and problem solving
- **Life Skills / SAP**: OT and TR to assist with obtain health insurance, resume bill paying, establish shopping and meal management, self soothing free time activities (art)
Generalization Phase

Key Principles for all Specialty Areas

• Once symptoms are stabilized, teach the client to self direct and maintain systems
• Self Monitoring
• Self Regulating
• In residence and in the community
• Development of daily rhythm
• Development of stable activity pattern
• Cross train with family, next setting
Generalization Phase: Specific Approaches

• Medication Self Administration
• Escalation Chain
• Functional Trials
• Individualized Pain Plan
• Individualized Vestibular Plan
• Individualized Sobriety Plan
Generalization Phase

Functional Trials

• Contrived situations and tasks for clients to discover current capacities
• Task is written and reviewed with client prior to implementation
• Task may be simulated or actual task in the residence or in the community
• Criteria for successful completion also reviewed
• Client is asked to predict how they will do
• Trial is implemented (videotape or witnessed)
• Results are reviewed and discussed
Programming Phases and Readiness for the Community

Programming Phases

1. Assessment
   - Medical
   - Clinical
   - Observational

2. Stabilization
   - Prioritization
   - Integrated Programming

3. Generalization
   - Community
   - Self Directed /Other Directed

Community Readiness

1. Medical Stability
2. Behavioral Emotional Stability
3. Residential Safety
4. Community Safety
5. Stable Activity Pattern
6. Commitment to Sobriety
Case Study

- Difficulty achieving stability; not able to return to living with her sister and family
- Granted additional time for an independent living trial with ongoing therapy and medical support while apartment search
- Had to be psychiatrically hospitalized
- Not permitted to return to independent trial
- Used this as a learning experience
- Resumed discharge planning
- Found an apartment; community-based TBI programming; behavioral health services
- Unable to return to work
- Resumed driving and responsibility for all IADL’s
Questions?

Thank you for your attention.