Applying Evidence to Discharge Planning in the Acute Care Setting

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Evidence-Based Practice
- Sackett et al (BMJ 1996) defined evidence-based medicine as "the use of current best evidence in making decisions about the care of individual patients"
- Jette et al (Physical Therapy, 2003)
- Menon et al (J Rehabil Med, 2009)

PT in Acute Care
- Part of the medical team/assist in diagnosis
- Initiate physical therapy intervention
- First line of education for families and patients on what to expect along the recovery process from a PT standpoint
- Play a role in making sure patients have adequate and appropriate services and equipment
- Perform patient centered evaluations and treatments
- Consult for appropriate discharge planning based on PT diagnosis/prognosis

Objectives
- Use the current body of literature to support a patient’s PT potential and use this information to advocate for appropriate discharge destinations
- Identify appropriate outcome measures and interpret the results to aid in decision making for discharge planning
- Identify the importance of a team approach to patient advocacy and discharge planning
- Formulate an assessment statement which will incorporate current evidence applied to PT diagnosis and prognosis

Objectives of Case 1
- Become familiar with medical prognostic factors in patients with traumatic brain injury (TBI)
- Review common assessment tools for disorders of consciousness
- Develop a comprehensive assessment statement to support discharge recommendations for a patient with an acute TBI

Case 1- Eddie
- HPI:
  - 20 yo male admitted 3/19 with gunshot wound through the midline of the head
  - Intubated at the scene
  - Initial Glasgow Coma Scale (GCS) 3
  - Emergently underwent R craniectomy, R temporal lobectomy, R MCA clipping
  - Initially required ventilator support and vasopressors
  - 3/24 Tracheostomy and Percutaneous Endoscopic Gastrostomy (PEG) placed
  - 3/25 head CT worsening
  - 3/26 returned to OR for persistent CSF leak - lumbar drain placed
  - 3/29 lumbar drain removed due to possible infection
  - 4/1 PT consulted

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Eddie cont.

PMHx and Social History
- Limited information due to patient's mental status
- Girlfriend and brothers involved, parents flying in from Florida
- Pt had been released from an out of state jail 10 days prior to admission
- No insurance, MassHealth application in the process

Medications/Labs

- **Diazepam**
- **Hydromorphone**
- **Vancomycin**
- **Meropenem**
- **Metoprolol**
- **Phenytoin Sodium**

**Labs:**
- **WBC**: 14.3
- **Hgb**: 10.2
- **Hct**: 30.6
- **Plt**: 427

Eddie's Initial PT examination

- **Arousal**: Maintained L eye open during treatment. Inconsistently followed "thumbs up" commands with RUE only. No effective means of communication
- **Resting VS**: HR 82, BP 120/60, RR 20, SpO2 96% on 40% TM
- **Pulm Status**: Fair spontaneous cough, suctioned via tracheostomy for moderate amounts of thick clear sputum. Shallow, even breathing pattern. Breath sounds: Diminished at bases, + upper airway congestion
- **Integumentary**: Craniectomy incision with staples, open to air, small amount of dried serosanguinous drainage. Trach, PEG, L radial a-line, foley catheter, R peripheral IV
- **Sensory Integrity**: Withdraws to pain x4, RUE flexion withdrawal, LUE extension withdrawal, BLE slow flexion withdrawal

**Medications/Labs**

- **WBC**: 14.3
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Eddie's Head CT

Eddie's Post-Op Head CT

Eddie's Initial PT exam cont.

- **ROM**: Mild loss of dorsiflexion B ankles (less than neutral)
- **Muscle Performance**: Demonstrated minimal, spontaneous movement at R hand only
- **Motor Function**: No visual tracking, + blink to threat consistently with L eye. R pupil un-reactive to light, L pupil reactive. 1+/4 BLE extensor tone
- **Mobility/Balance**: Total assist to achieve sitting at EOB. Once upright, required total assist to maintain upright with no postural or protective responses with LOB
- **Intervention**: At EOB attempted supported UE activity on bedside table, pt was able to open R hand in an attempt to reach for cup 1/10 trials.
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Eddie's Problem List
- Decreased arousal
- Retained secretions
- Decreased motor function
- Decreased ROM
- Decreased balance
- Decreased muscle performance
- Decreased independence with bed mobility and transfers

What do you think about Eddie's potential for recovery of function?
- What other tests and measures might be appropriate?
- Why is it important to determine severity of injury and prognosis early?

Prognostic Indicators
- Based on this chart review and examination, what prognostic indicators did you note?

Prognostic Indicators
- Head CT: Midline Shift
  - Englander, J et al (Arch Phys Med Rehab 2003): Midline shift >5 mm or a subcortical concussion are predictive of level of assistance and supervision required

Prognostic Indicators
- Husson, E et al (J Rehabil Med 2010): Systematic review to identify which determinants 1 month post injury predicted functioning at 6 months
  - Results:
    - Predictive of outcome at 6 months: GCS on admission, Motor Score, Midline Shift, SDH
    - Not predictive of outcome at 6 months: Gender, IVH
  - CRASH-Trials (BMJ, 2005)

Prognostic Indicators
  - Results:
    - Strong evidence for predicting disability:
      - older age
      - pre injury unemployment
      - pre injury substance abuse
      - more disability at rehab discharge
    - Strong prognostic factors for being nonproductive:
      - pre injury unemployment
      - longer post traumatic amnesia
      - pre injury substance abuse
      - more disability at rehab admission
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**Examination Tools**

- **GCS**
- **GOAT**
- **JFK-CRS**

**GCS**

Since its introduction in 1974, it has been one of the most frequently used scales for predicting outcome after head injury.

- Motor vs. Total score
- GCS score when combined with other findings holds more weight
- Limitations

McNett et al (J Neurosci Nursing 2007)
Chamoun et al (J Neurosurg 2009)

**GOAT**

- Galveston Orientation and Amnesia Test
- Score of >/= 76 on two consecutive occasions is consistent with emergence from PTA
- Research validated for all severities
- Duration of PTA can help determine prognosis
- Predictive of functional outcome and return to work

Kosch et al (Brain Injury 2010)

**JFK-CRS-R**

- 23 item scale that characterizes disorders of consciousness (DOC) and tracks recovery
- Sensitive to emergence from vegetative state
- Six subcales
  - auditory, visual, motor, oromotor, communication, arousal
- High inter-rater, test-retest, and internal reliability
- Clinical interpretation
  - Lowest items=reflexive activity
  - Highest items=cognitively-mediated behaviors
States of Arousal- Vegetative State
- Patients in a vegetative state (VS) do NOT show any evidence of any of the following:
  - Ability to follow commands
  - Make an intelligible verbal response
  - Make verbal or gestural attempts to communicate
  - Exhibit localization or automatic motor response
- The primary difference between coma and VS is the presence of eye opening responses and sleep/wake cycles.

Why is it important to evaluate states of arousal?
- To determine appropriate medical and rehabilitative interventions
- Misdiagnosis of patients who are in a MCS as being in a VS is as high as 40%
- Insurances want documentation of patients arousal and ability to participate

Prognostic Indicators
- Katz et al (Progress in Brain Research 2009):
  - The aim of the study was to look at the range of possible outcomes for 36 patients with TBI or non-traumatic brain injury admitted to a slow to recover TBI acute rehab program
  - Results
    - Emerging from VS-MCS by 8 weeks was a sign of good functional potential to continue to recover
    - A substantial proportion returned to household independence

Application of the Literature
- Based on his initial examination, how would you characterize Eddie’s state of arousal?
- From what we have reviewed- what are his prognostic indicators?
Assessment Statement

20 year old male sustained GSW 3/19 now s/p R craniectomy, R temporal lobectomy and R MCA clipping presents with listed impairments and functional limitations consistent with non-progressive disorders of the CNS (5D). The positive indicators for rehab potential to return to a modified level of independence as a community ambulator are: his inconsistent purposeful movement of RUE, his age, and his prior level of function. Findings guarding his rehab potential to return to work and achieve full recovery of independence are: the magnitude of his injury, level of arousal and limited motor findings. The patient will require multidisciplinary rehab upon discharge to maximize his outcome.

Eddie’s follow up- 1 year post

- Ambulates with a cane and Left AFO
- Alert and Oriented x 3, some difficulty with higher level executive functioning
- Lives with his fiancé
- Continues to receive therapy as an outpatient
- Residual R eye blindness
- Distal L arm flexion contracture but has shoulder and triceps function

Case 2 - Mrs. L

- 85 yo female admitted with altered mental status and recent fall
- Hypotensive in the ED and started empirically on antibiotics for presumed sepsis
- All occurred in the setting of increased Respiridone 3 days prior
- Initially admitted to the ICU for monitoring and IV fluids
- Found to have increased INR and acute renal failure
- Transferred to floor within 24 hours

Eddie’s JFK CRS-R scores

Case 2-Objectives

- Perform an in-depth chart review to identify risk factors for delirium and establish a true baseline
- Identify appropriate outcome measures for fall risk assessment
- Understand the importance of creating a balance between safety and independence for discharge planning
- Discuss the importance of team communication and caregiver involvement to decrease readmission

Mrs. L PMHx

- dementia with hallucinations
- spinal stenosis
- osteoporosis
- HTN
- high cholesterol
- CAD
- DVT
- PE
- GERD
- pubic rami fracture
- L spine fracture
- mitral regurgitation
- mult falls
- appy
- low back pain
- hypothyroid
- rib fracture
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Chart Review Mrs. L

Meds on eval:
- Oxycodeone
- Acetaminophen
- Amiodarone
- Warfarin
- Lisinopril
- Lopressor
- Simvastatin
- Omeprazole
- Vit D
- calcium carbonate
- folic acid
- lidocaine patch

Soc Hx/PLOF: Lives alone in apt upstairs from her supportive drt. Amb with rolling walker. + fall history, with recent injurious fall (rib fracture)

Mrs. L PT Exam

- Difficult to arouse, oriented to hospital but not BIDMC or Boston. Not able to report date, but aware of year.
- ROM, strength: grossly wfl
- Mobility: S to sit at eob, cga to stand and amb with rolling walker.
- HDR: supine BP 142/60 HR 88
- sitting BP 130/62 HR 92
- standing BP 116/60 HR 96
- Gait: dec step length B, required cues for obstacle negotiation. Speed 6.16 m/s. only able to amb 70 feet due to fatigue.
- Balance: 17/28 Tinetti/POMA

Delirium

- Transient syndrome characterized by disordered attention, thinking, and perception.
- Causes:
  - D Dementia
  - E Electrolyte Disorders
  - L Lung, liver, heart, kidney, brain
  - I Infection
  - R Rx Drugs
  - I Injury, Pain, Stress
  - U Unfamiliar environment
  - M Metabolic

Mrs. L Evaluation

- 85 f admitted with altered mental status and hypotension. Pt presents to PT with impaired endurance and functional mobility consistent with deconditioning (6B). Pt is functioning well below baseline limited by complaints of fatigue likely related to recent decrease in activity level, dehydration/ARF and orthostatic hypotension. She is at a high risk for falls given her decreased cognition which appears to be an acute delirium given the onset and dramatic change from baseline. Pt has potential to return to prior level of functioning as delirium resolves, and she is able to participate in an exercise regimen. At this time we are unable to make discharge recommendations due to contounding delirium. We will continue to re-assess.

Mrs. L Follow-up

- Updated medical status: oxycodone stopped, IVF corrected ARF/dehydration
- Subjective: "I'm feeling better!"
- Mobility: I with bed mob, sup-sit and sit-stand.
- HDR stable
- Gait: S for 250 feet with rolling walker, gait speed 0.4 m/s
- Balance: Tinetti/POMA 21/28

Fall Risk Assessment

- Previous Falls
- Balance Impairment
- Dec ms strength (upper or lower)
- Visual impairment
- >4 medications
- Gait impairment
- Depression
- Dizziness or orthostasis
- ADL limitations
- >80 years old
- Female
- Low body mass index
- Urinary incontinence
- Cognitive impairments
- Arthritis
- Diabetes
- Pain

Tinetti (JAMA, 2010)
Fall Risk Assessment

- Examination should include:
  - Cognitive evaluation
  - Postural blood pressure measurement
  - Cardiac rhythm and rate
  - Muscle strength
  - Joint ROM
  - Examination of the feet and proprioception
  - Balance and gait screen

Tinetti (JAMA, 2010)

Performance Oriented Mobility Assessment

- Determine fall risk
- Ascertain balance and gait impairments that require intervention

Tinetti (JAMA, 2010)

Gait Speed Analysis

Fritz, Lusardi (J of Geriatric Physical Therapy, 2009)

Management of Risk Factors

- Improve as many risk factors as possible to reduce the risk for falls
- Strongest evidence for fall prevention
  - Medication reduction
  - Physical therapy
  - Home safety modifications

Tinetti (JAMA, 2010)
Arbesman (AJOT, 2012)

Striking a Balance

- The clinician must identify which risk factor/condition presents the greatest threat to the ultimate goal of the patient.
- Negotiations are often needed to get the family to agree, and the patient to consent in order to strike a balance between safety and independence.

Tinetti (JAMA, 2010)

Implementation of Recommendations

- Smith et al (Physical Therapy, 2010):
  - Results:
    - PT's discharge recommendations were implemented 83% of the time
    - Patients were 2.9 times more likely to be readmitted:
      - when the therapist's discharge recommendation was not implemented
      - when recommended f/u services were lacking
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Implementation of Recommendations
- Shubert, T (Journal of Geriatric Physical Therapy, 2011)
  - Study aims to describe current and best practice for fall risk intervention
  - Results:
    - Less than 50% of therapists surveyed linked interventions to risk factors or referred to other providers
    - When referred, 1/3 of patients did not seek care
    - Nearly 50% of patients received balance intervention only once during their course of care

Follow-up Mrs. L at 1 year
- She has shown a decrease in readmissions
- No recent falls
- Ongoing medical issues
- Did we make the right choice?

Barriers to Using EBP
- Time
- Availability of articles
- Negotiating search engines
- Lack of knowledge for interpreting results
- Guidance

Bringing Evidence to Your Setting
- Monthly Case Conference
- Journal Club
- Clinical Question
- Mentoring/Identifying Resources
- Attending Conferences

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