Pediatric Traumatic Brain Injury Life Care Planning

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https://www.youtube.com/watch?v=Fvy4hHjpGb0
Life Care Plan

Dynamic Document & Process

• Medical Care (acute and chronic)
• Changing Development of the Child
• Changing family dynamics
Collaborative Effort

- Physician and Life Care Planner
- All members of treatment team
  - PT/OT/SPEECH/MD/DO/Nurse/SW/Teacher/Family
- Combined evaluation
  - In home if possible
  - In School observation
United States

- 2.5 million TBI
- 2.2 million treated in ER
- 280,000 admitted
- 50,000 deaths
Incidence of Acquired TBI

- 148-270 per 100,000 all males *(2:1)*
- 70-116 per 100,000 all females *(1:2)*
  - Concussions/TBI of all severities
  - MVA/ Bicycle account for 50% injuries
  - Falls, assault, firearms, recreational activities
  - MVA 50% Alcohol Related
Mechanism
Death by Age Group

Percent Distributions of TBI-related Deaths by Age Group and Injury Mechanism — United States, 2006–2010

- 0-4
- 5-14
- 15-24
- 25-44
- 45-64
- ≥ 65

- Motor Vehicle Traffic
- Falls
- Assault
- Struck by/Against
- Self-Inflicted
- All Other Causes
Firearm Suicide Deaths

- 41,000 total
- 21,000 self inflicted
- 57 per day
- 20-25% 5-25 yrs old
Homocide by Firearm

- 16,000 All
- 11,000 Firearms
- 30 per day
Rates by Age Group
Monetary Cost

• 76 Billion Annually
• Medical, lost wages, disability, etc
• 90% costs for severe TBI

• MUST BE COMPREHENSIVE REGARDLESS of Financial Limitations
Injury Severity

- **GCS**
  - < 8 severe
  - 9-11 moderate
  - 12-15 mild injury
    - 72 hr GCS
    - Time to GCS 6 or 15

- **Verbal (in young children)**
  - 5 smiles oriented to sound, follows objects interacts
  - 4 cries but consolable interacts inappropriately
  - 3 cries but is inconsistently consolable, moaning
  - 2 inconsolable crying, irritable
  - 1 no response
Associated Injuries

- 5-10% incidence of SCI
- Brachial plexus injuries, fractures, solid and hollow viscous injuries,
  - Many identified in the post acute setting.
Motor Deficits

- Diffuse injury
  - Heterogeneous population
- Focal brain injury
  - Hemiparesis
- Balance impairments
- Tremor
- Dystonia
- Spasticity
  - UMN lesion
- Rigidity
  - (hypoxia/ischemia)
Sensory Deficits

- Anosomia
- Hearing impairment
  - Central processing deficit
  - Can coexist with cognitive impairment!

- Visual Impairment
US Military
Cognitive Deficits

- Largest cause of disability
- Constellation of sequelae
- Injury to developing brain
  - Associated learning difficulties
  - Delayed onset of disability and impairment
Cognitive Deficits

• Arousal and Attention
  – Attention: allows the individual to focus on the pertinent sensory stimuli and select which stimulus will elicit a response
  – Among most common deficits after TBI

• Attention involved in memory impairment

• Higher incidence of TBI among children with prior dx of ADHD
Cognitive Impairments

- Abnormal emotional expression
  - Initially lack of emotional expression
  - Later emotional lability
  - Inability to identify emotions in others
  - Social isolation

- Abstract reasoning
  - Very common
  - Egocentricity
  - Lack of insight
Cognitive Impairment

- Agitation
  - hyper arousal
  - More common with frontal lobe and subcortical lesions
  - Associated with more severe injuries

- Memory + learning
  - Correlates with severity of injury
  - Academic performance correlates with severity of injury
Cognitive Deficits

• Communication
• Up to 2/3 of inpatient rehab pts
  – 1/3 Dysarthria
  – Aphasia
  – Age of injury may influence ultimate language outcome

• Behavioral sequelae
  – Impulsivity
  – Disinhibition
  – Preschool injured children at higher risk for later behavioral problems which interfere with school performance
Academic Placement

- What kind of School Setting
- What kind of Support
- IEP
- Vocational Training
- Vocation Placement
Employability

- Yes/No
- Full/Part time
- Supervised
- Vocational Expert
Medical Complications

- Neuroendocrine dysfunction
  - Diabetes insipidus
  - SIADH
  - Cerebral salt wasting

- Precocious puberty
- Delayed puberty
- Hypothalamic and pituitary disorders
Medical Complications

- GI hemorrhage
- Enteral feedings
  - GERD
- Bowel Management
- Bladder management
- Heterotopic ossification
- Post Traumatic Seizers

- Central Autonomic Dysfunction
  - Begins in acute period
  - Can persist for several months
  - Prenatal injury may predispose to lifetime symptomatology
Community Reintegration

- In-Out of home services
  - 24hr supervision/care/respite
- IEP
  - Dynamic tool
- Return to sport/recreation
Attendant Care

- Child
- Adolescent
- Adult
- Hours
  - 24/7
  - School
  - Night time
Therapy Service

• Physical
• Occupational
• Speech
• Recreational
• Behavioral
• Family
• DURATION & FREQUENCY  ??????
Equipment/Supplies

- Wheel Chair
- Gtube
- Medications
- Frequency/duration
Life Expectancy

• Duration and Frequency
• Damages
• No specific actuarial life tables
• Education/Research
• Training
• Experience
Continuum of Care Model

- Accident to Recovery
- Field, Ambulance, ER, OR, PICU, Floor
- Rehab, Home, School, Post School

- MUST COVER ALL of THESE
St. Luke’s PRM Team - 40 FTE

- Inpatient (beds pending)
  - PT/OT/Speech
  - Outpatient
    - 5 Centers
      - Boise, Caldwell, Meridian, Nampa, Twin Falls
      - PT/OT/Speech/Social Services
Prevention – Key!!!!!

• MVA
  – Seat belts, airbags, Drunk driving
• Helmets
• Parental education
• http://www.cdc.gov/traumaticbraininjury/pubs/
Dr J’s Laws for Parents

- Two Feet on The Ground Rule
- No helmet
  - no bike or scooter
- No seatbelt
  - not leaving or stay home