



Pediatric Acquired Brain Injury: Acute Care Perspectives for Mild, Moderate, and Severe Injuries

Panel Members:

Drew Davis, MD, UAB Pediatric Rehabilitation Medicine

Jim Johnston, MD, UAB Pediatric Neurosurgery

Santiago Borasino, MD, UAB Pediatric Critical Care

Kimberly Gran, MD, UAB Pediatric Emergency Medicine

Drew Ferguson, MEd, ATC, UAB Sports Medicine

**The Sarah Jane
Brain Project™**

National Pediatric Acquired Brain Injury Plan



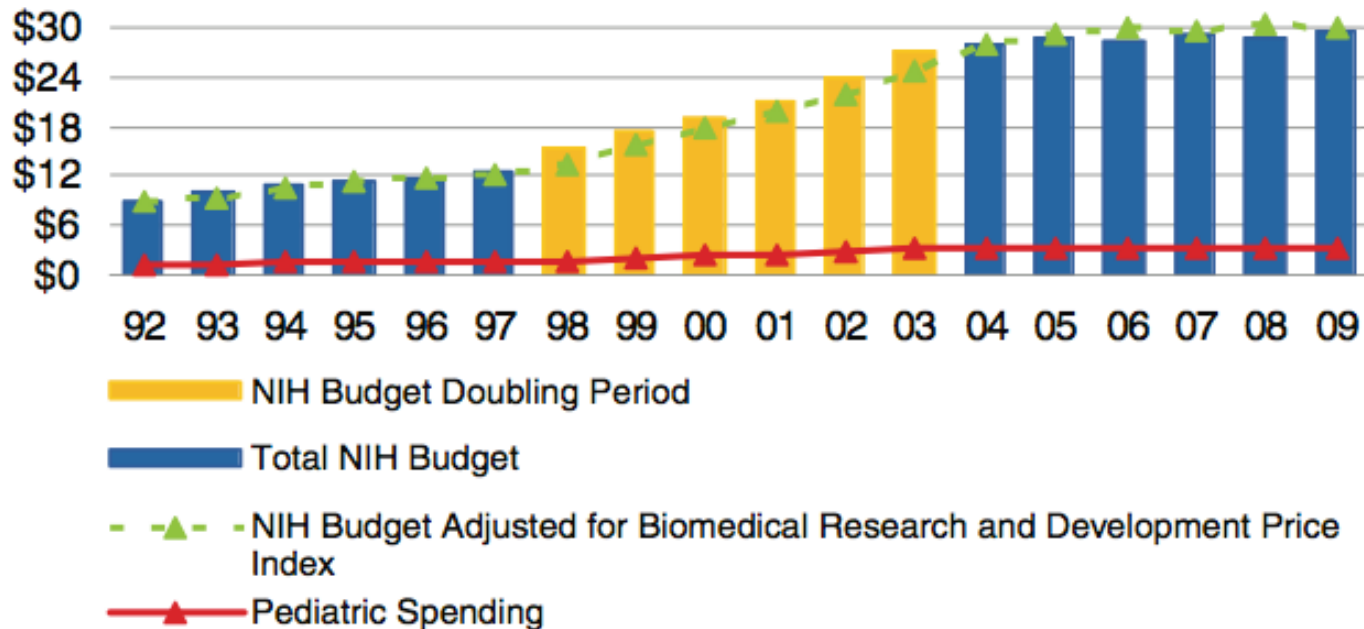
<http://vimeo.com/19412084>

Current Funding Status

- “no new treatment for TBI has been approved in the past 30 years. NIH funding for TBI research in 2010 is expected to be US \$81 million, whereas that for Alzheimer’s disease, which has a similar prevalence in the USA, is \$527 million.”

Current Funding Status

- NIH appropriations to pediatric research have remained flat since 1992



National PABI Plan

- Alabama's Role
 - Participated in draft of National PABI Plan
 - UAB/Children's Hospital selected as State Lead Center of Excellence
 - UAB/Children's Hospital serves as regional center for Transition Programs
 - Participate in lobbying efforts in increase awareness among politicians
 - Continue to pursue funding of PABI Plan
 - Proclamation of Brain Injury Awareness Month



Proclamation

By the Governor of Alabama

WHEREAS, Traumatic brain injury is a leading cause of death and disability among children and adults in the United States. Each year in Alabama, almost 10,000 people receive a brain injury, 500 die and 1,5000 become disabled; and

WHEREAS, among children ages 0 to 14, TBI results in an estimated 2,685 deaths, 37,000 hospitalizations and 435,000 emergency visits each year in the United States; and as children are at an increased risk for long-term deficits and catastrophic consequences; and

WHEREAS, leading cause of TBI are reported to be falls (28%); motor vehicle-traffic crashes (20%); struck by/against events (19%) and assaults (11%); concerns about the number of injuries sustained by those serving in Iraq and/or Afghanistan, and among athletes of all ages have also come to light; and

WHEREAS, a concussion is considered a serious injury to the brain; multiple concussions can lead to lifelong disability and death; concussions are widely under-recognized by the general and athletic populations, and many concussions go undiagnosed by medical providers; and

WHEREAS, very few educational programs are available for patients with mild TBI, their caregivers, teachers, coaches and medical providers; and

WHEREAS, children and adults with brain injury have unique needs for accommodations enabling maximum independence and success in activities of daily living, educational and vocational pursuits, and home and community life.

NOW, THEREFORE, I, Robert Bentley, Governor of Alabama, do hereby do proclaim the month of March 2011 as Alabama's

Brain Injury Awareness Month



Given Under My Hand and the Great Seal of the Office of the Governor at the State Capitol in the City of Montgomery on the 2nd day of February 2011.

Robert Bentley
Governor Robert Bentley

Current Efforts in Categories of Care

- Prevention
- Acute Phase
- Reintegration Phase
- Adult Transition
- Mild TBI
- Rural/Tele-health
- SJBP Virtual Center of Excellence

Prevention

- Think First



- Safe Kids



- Car Seats for Kids



- Injury Free Coalition for Kids



Prevention

- Southeastern Child Safety Institute
- AAP Committee on Injury Prevention
- Sports Concussion Committee of AHITF
- UAB Injury Control and Research Center



UAB Injury Control and Research Center

Injury over the Lifecourse Research Projects 2004-2009

Childhood	Teenage Years	Reproductive Years	Middle Age	Old Age
	Preventing Youth Violence			
	Reducing Youth DUI and Risky Behavior			
Pedestrian Safety				
		Endotracheal Intubation		
		Problem Solving for Caregivers of TBI Patients		
		Longitudinal Study of Rehabilitation Outcomes		

Acute Care

- Children's Hospital is the only state designated Level I pediatric trauma center in Alabama.
- UAB is the only American College of Surgeons designated Level I adult trauma center in the state.
- Children's Hospital has the only pediatric inpatient rehabilitation unit in the state.

Reintegration Phase

- Children's Hospital Acute Rehabilitation Case Manager
- Children's Rehabilitation Service (CRS) Traumatic Brain Injury TBI Case Coordinator
- CRS Passages: A Community Based, Family-Centered Model of Care

Adult Transition

- CRS Teen Transition Clinic
- ADRS The Interactive Community-Based Model (ICBM)
- UAB TBI Model System

Mild TBI

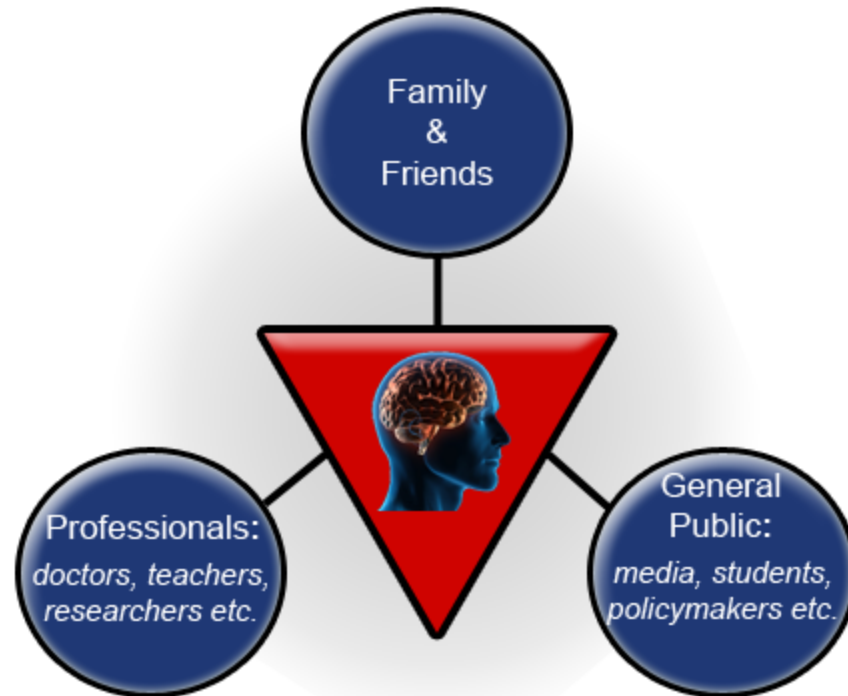
- Sports Concussion Committee-AHITF
– AHSAA
- Children's Hospital Concussion Task Force

Rural/Tele-health

- ADRS MCHB Grant
 - 1) expand the Statewide System of Care for children and youth with TBI who are unidentified, unserved/underserved, including those in **rural communities**

SJBP Virtual Center of Excellence

- Sharing our experiences through a worldwide, online ecosystem to deliver better outcomes for those with brain injuries and their families.

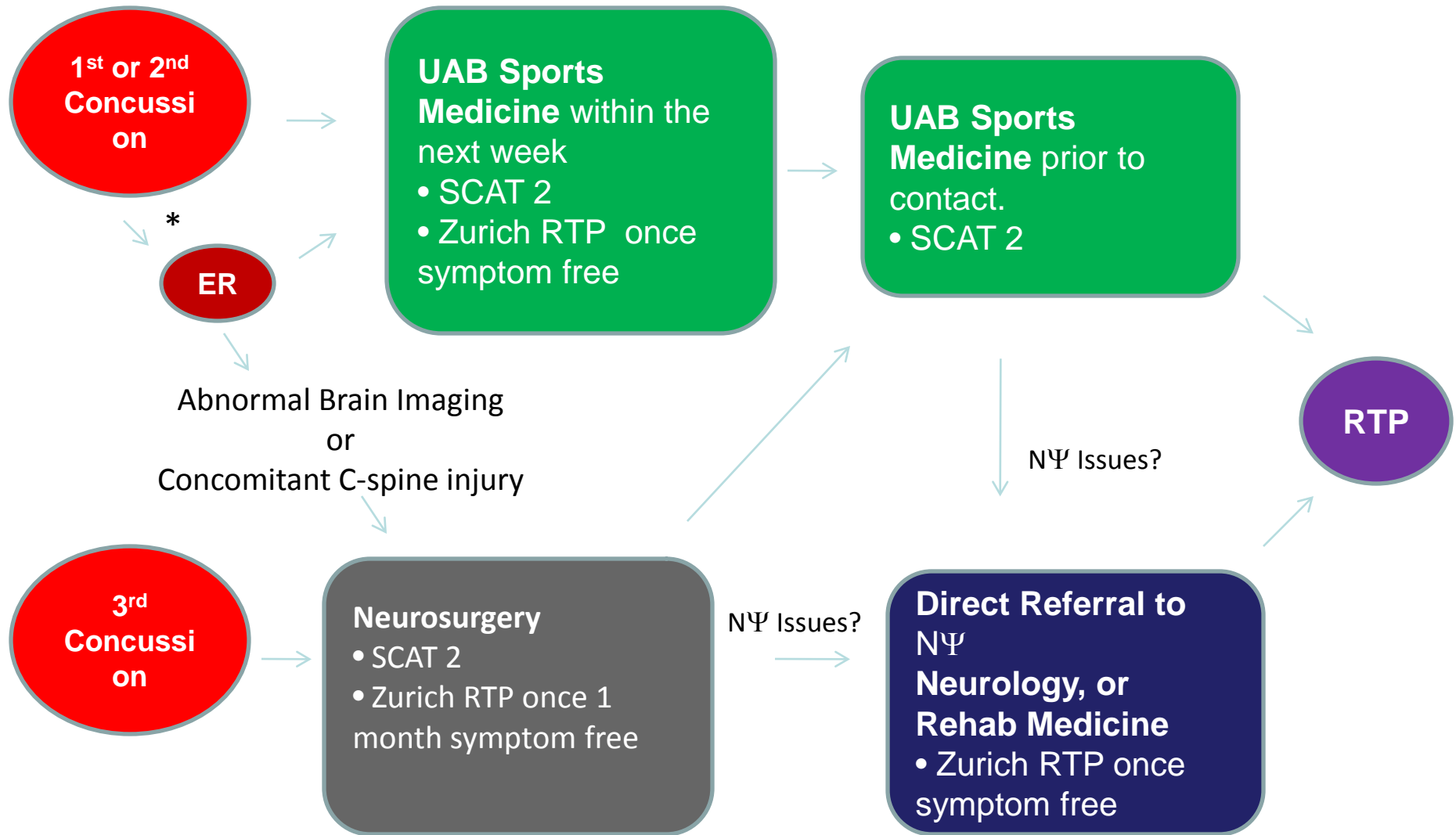


Acute Care of Mild, Moderate, and Severe Brain Injury

A discussion of the acute care of mild traumatic brain injury or concussion

A discussion of the acute care of moderate to severe brain injury

Children's Hospital Concussion Task Force Management Progression



RTP=Return to play

* ER referral on night of concussion at discretion of on-site trainer

Pediatric ICU Severe TBI Protocol

Check
 Patient position (head neutral, elevated HOB 30°)
 Equipment functioning (good waveform)
 No recent interventions
 Exclude seizure activity (EEG as indicated)
 Have all Goals of Management been met?

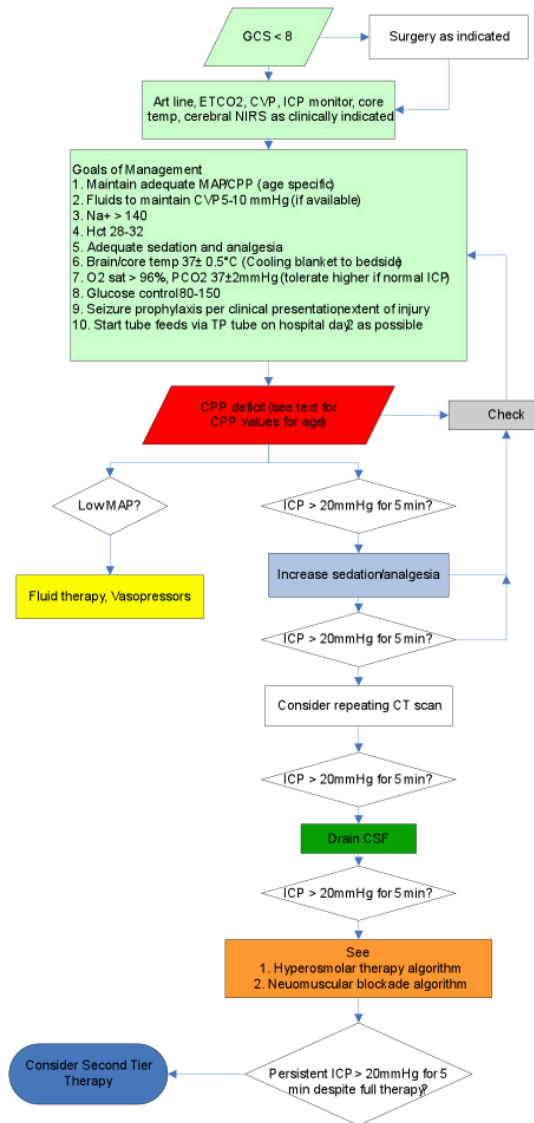
Fluid therapy, Vasopressors
 CPP should be maintained at all times
 CVP 8-10mmHg, NS for fluid boluses
 NS for maintenance >2yo D5NS for younger
 keep glucose 80-150mg/dL
 Maintain Hct 28-32
 Once CVP at goal, use inotropic/vasopressor support

Sedation/analgesia
 Sedate to SBS -1 to -2
 Midazolam
 Fentanyl or Morphine
 Consider Dexmedetomidine as short acting agent
 Avoid Hypotension
 Consider NMB if problems with mechanical ventilation

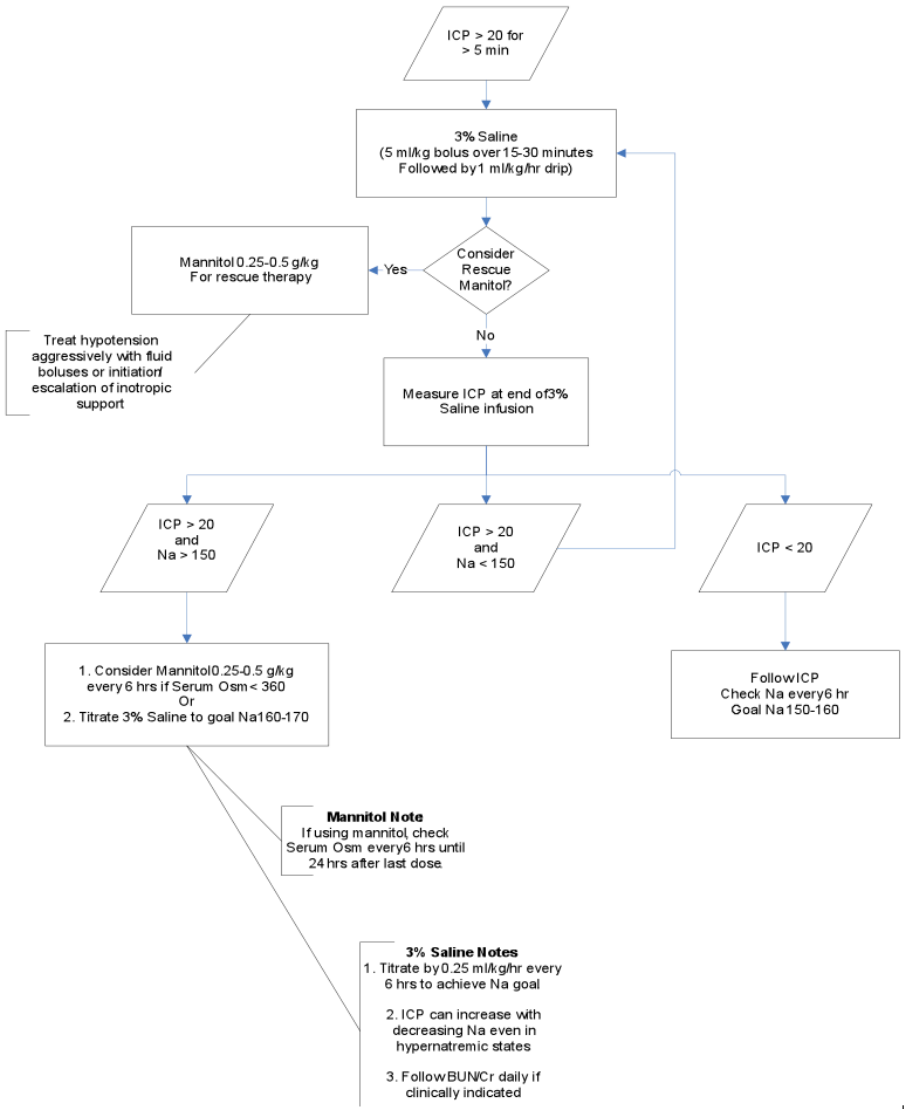
CSF Drainage Options
 Initial setting and all changes per Neurosurgery service
 Not to drain at 10cm above external auditory canal
 Drain CSF for 15 min, then re-evaluate ICP
 If persistent CPP deficit or ICP > 20, consider
 continuous drainage with intermittent ICP readings

Hyperosmolar Therapies - See Algorithm

Second Tier Therapies
 Is the patient salvageable? (Assess mechanism of injury, best GCS, age, pupil reactivity, CT scans)
 Consider:
 1. decompressive craniectomy
 2. barbiturate therapy (burst suppression)
 3. hypothermia



Hyperosmolar Therapy Algorithm



Questions for the Panel

- What is the number one research question you would like to have an answer to related to brain injury?
- Where do you see the largest variation in treatment of brain injury, either within our own institution, across the state, or across the country?
- What is your biggest challenge when treating an individual with a brain injury?
- What clinical and/or research efforts do you currently participate in to address the challenges faced in treating this patient population?
- What do you see as the biggest challenge to answering the unknown questions surrounding the treatment of brain injuries?
- How will the National Pediatric Acquired Brain Injury plan improve the treatment of individuals with brain injuries?



Thank You

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