2025 North Carolina Brain Injury Conference

Bridging Gaps: Experiences of an Interdisciplinary Rehab Consult Team

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Brain Injury Association of North Carolina

Rehabilitation Education and Care Hub

UNC HEALTH Children's

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Our Team

Dr. Teddy Yip, PM&R-Physiatrist

Dr. Hannah Allen, Neuropsychologist

Kim Sellinger, Speech-Language Pathologist

Kerry Blazek, Physical Therapist

Brianna Fowler, Occupational Therapist

***Kayleigh Wilson**, Recreation Therapist

Katie Van Tiem, Inpatient Nurse Coordinator- Peds PM&R

***Janet Bettger,** Research Coordinator

*Not pictured

Fitch Family Comprehensive Pediatric Rehabilitation Program

Identified need for increased access to pediatric rehabilitative care in North Carolina

- ***Coordinated, multidisciplinary rehabilitative care that begins soon after initial admission to the hospital;***
- *Comprehensive acute inpatient pediatric rehabilitation;*
- *Day rehab programs; and*
- *Outpatient medical and therapy visits at a state-of-the-art pediatric rehabilitation center.*

https://www.med.unc.edu/phyrehab/uncategorized/fitch-family-comprehensive-pediatric-rehabilitation-program/

Team Goals

•Identify all therapy and supportive resources available to the patients and families

•Provide support during the hospitalization through their discharge and outpatient.

•Support of the Fitch Family Comprehensive Pediatric Rehabilitation Program through events, social media, education, volunteerism.

Team Structure and Initiatives

Twice weekly interdisciplinary meetings

- Patient rounds
- Education Materials
- Presentations and publications

Site Visits to AIR and Residential Care Facilities

- Levine Children's
- WakeMed
- Vidant (ECU)
- Hilltop House (Raleigh)
- RHA- Tar River (Formerly known as Howell Center)

REACH Patient Profile

Common diagnoses

- Traumatic Brain Injury
- Spinal Cord Injury
- Autoimmune Disorders
- Genetic Disorders
- Oncological Disorders
- Disorders of function (cerebral palsy, spina bifida etc.)

Patients with complex medical, social, therapeutic, and equipment needs

Require daily/intensive therapy sessions from occupational, physical and speech therapists

•Inpatient rehab candidates

Often followed by child life, psychology, school, supportive care, chaplain, recreation therapy

Team Roles

PM&R Physician

- Optimize function and independence
- Prescribe medications, therapies, bracing, and equipment.
- Obtain imaging and labs
- Manage issues common after TBI: ex. alertness, agitation, hypertonicity

Neuropsychologist

- Assess cognitive recovery level for patients, including orientation, memory, problem solving, emotional control, etc.
- Generate recommendations to support recovery while inpatient, at home and in the community/school setting
- Follow patient after discharge

Nurse Coordinator

- Collaborate wi th providers on patient's rehabilitation plan
- Coordinate referrals for the next level of care
- Maintain data and information on patients for ongoing care management and research

Research Coordinator

- Establish research guidelines and ensures compliance
- Identify speaking and publication opportunities
- Facilitate meaningful data collection and interpretation

Team Roles

Speech-Language Pathologist

- Diagnose and treat communication and feeding/swallowing problems.
- Conduct objective swallow assessments (MBSS/FEES)
- Identify safe diets and swallowing strategies
- Evaluate PMSV in tracheostomy patients

Occupational Therapist

- Address skills needed for ADLs (dressing, bathing, etc.), school, work, and leisure/play.
- Functional cognition, FM skills, strength, coordination, developmental milestones, and visual processing.

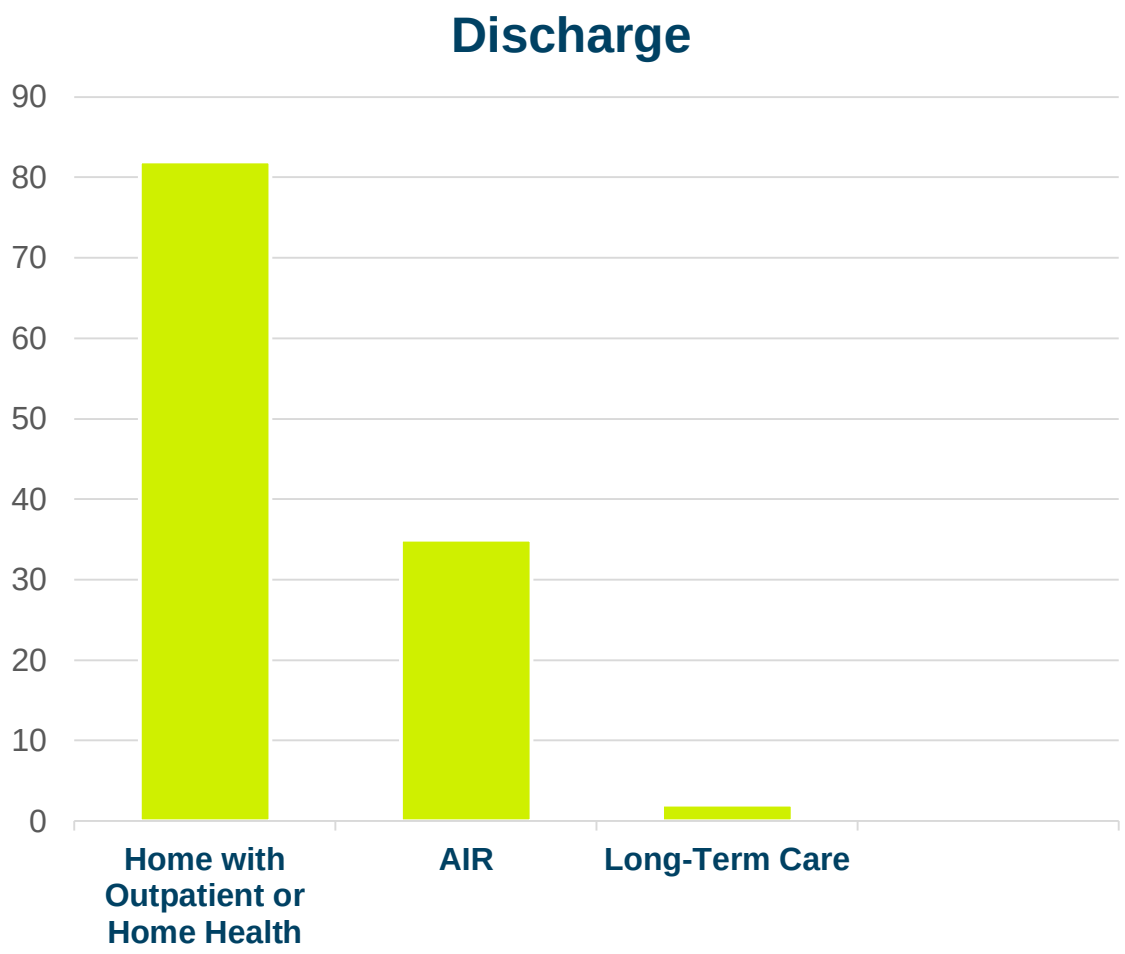
Physical Therapist

- Evaluate strength, muscle tone, coordination, posture, endurance and general mobility
- Help patients regain movement and build strength through physical activity, exercise, and education
- Identify assistive devices and/or equipment that can help a patient reach mobility goals

Recreation Therapist

- Address patient goals related to leisure and life functioning.
- Assist patients in practicing positive coping skills, emotional regulation techniques, and stress and anger management strategies.
- Adapt activities to fit patient's needs and interests to promote healthy leisure and recreation participation after

Discharge Planning, Disposition and Follow-up

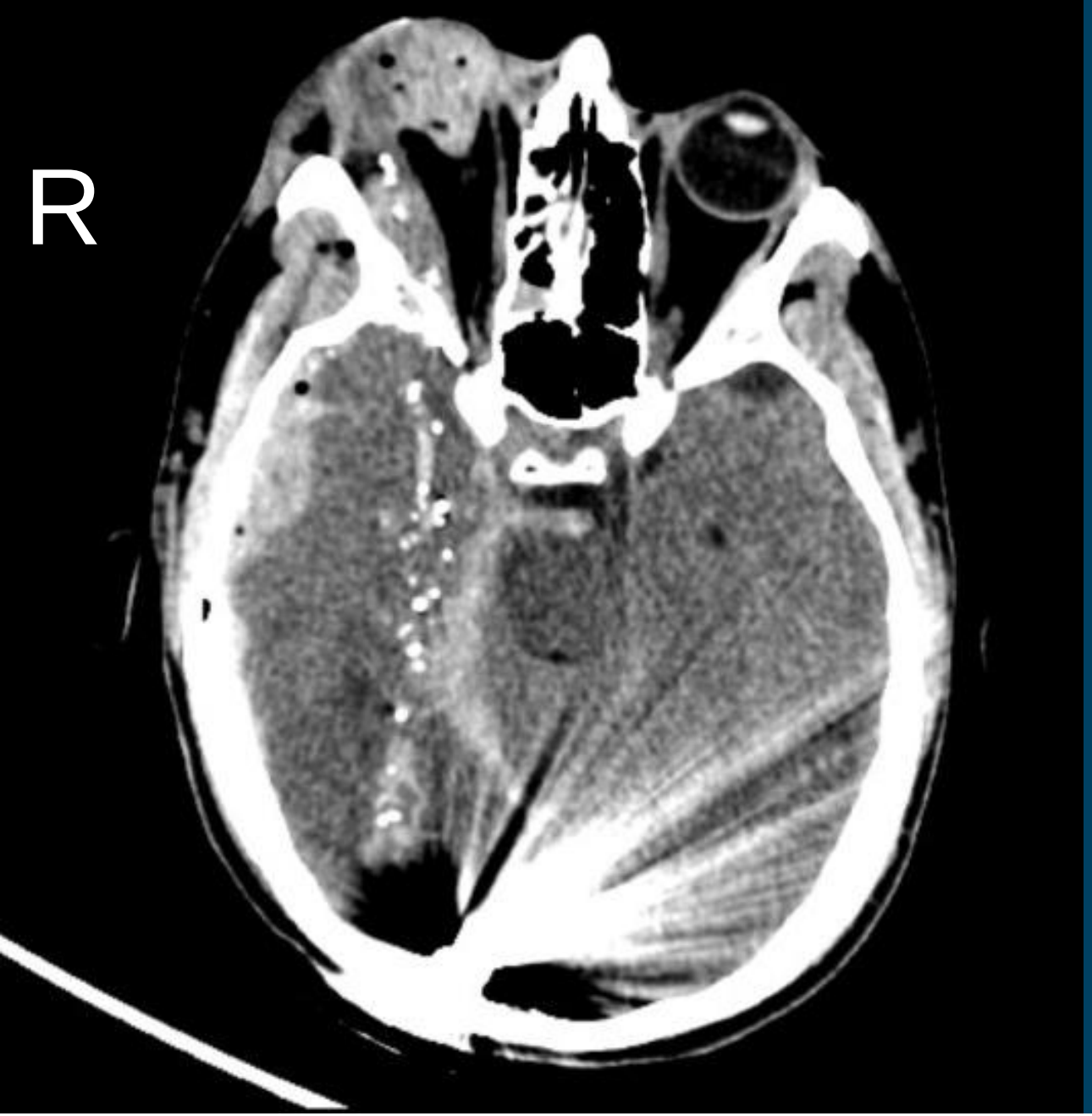


Nurse Coordinator…

- Provides and discusses outpatient therapy resources with patient and family to create optimal rehabilitation plan.
- Collaborates with inpatient rehab facility and patient/family on rehab plan after discharge to ensure continuity in therapies.
- Ensures outpatient therapy referrals are coordinated and scheduled prior to discharge.
- Contacts patients and family after discharge to discuss therapies and be a contact for rehab services.

Prosepective Research

- Patient and family satisfaction
- Transition time to outpatient therapies
- Transition time to AIR/LOS Acute
- Access to AIR for qualiifying patients
- Time to access equipment
- Compliance for follow up post-acute
- Transition to home, school, work and community
- Communication with and support for primary medical team during acute hospitalization
- Education effectiveness for providers and families



Case Example

Demographic:

- Teenager
- Male

Past Medical History:

- Previously healthy
- Vaccinations up to date

Chief Complaint:

- Accidental gunshot wound (GSW)
- Bullet traversing the R sphenoid wing, R temporal lobe, petrus R temporal bone, and R occipital lobe
- SDH and SAH
- Severe R ocular injury with ruptured globe
- Foreign body fragments

Case Example

Upon arrival to ED

Constitutional Intubated

Eyes Obvious globe rupture with surrounding periorbital ecchymosis. Left eye is fixed, 2mm

Cardiovascular RRR

Pulmonary Intubated, no respiratory distress

Abdominal No distension

Neurological GCS – 3, GCS motor subscore is 1. Positive cough, positive gag reflex, positive left corneal reflex. Initial GCS upon EMS arrival at scene: 7

Brief Hospital Course

Transferred to UNC PICU

Neurosurgery Craniotomy and EVD placement x6 days

Opthomology Uncomplicated right eye evisceration without orbital implant and tarsorrhaphy.

Intubated x9 days

Complications

- Acute cystitis
- Paroxysmal Sympathetic Hyperactivity (PSH)
- Poor PO intake (G-tube placed day 21)

Discharged to AIR

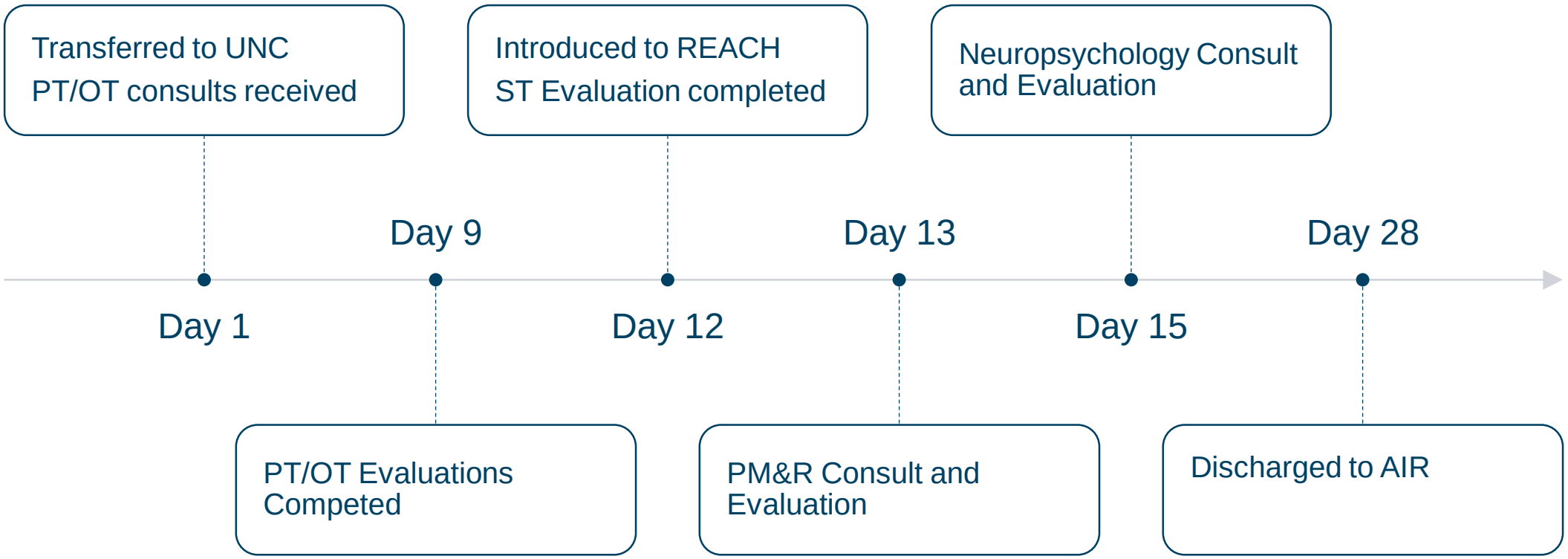
LOS: 28 days

Initial Discussion at REACH Patient Rounds

Lastname, Firstname	DOB: 1/1/10	Age: 15 yo M	Home: Hometown, NC
Room: 2C01	**Service: PICU**	**Adm. Date: 1/7/25**	**Dispo: TBD**
Dx: transfer from OSH with a gunshot injury to right eye c/f SAH, SDH and ICH on right hemisphere with 0.5 cm midline shift c/b by increased ICP			

Medical:	ICP refractory to medical management now with stable ICPs s/p decompressive hemicraniectomy on 11/9. He is stable despite EVD not draining, NSGY planning to remove EVD potentially today. Will also remove A-line today. He is starting to move his right side. -L EVD removed 1/15 -NG tube feeds- bolus -HFNC, intermittent agitation Extubated 1/14, on HFNC. Ophtho: s/p evisceration on 1/7 PM&R consulted- will see 1/18 week
PT	1/15- overall decreased strength L>R side, increased tone L side, decreased functional mobility. He inconsistently followed commands today. He displayed active movement of R UE and R LE through partial range. He also displayed AAROM with L UE through partial range. No active movement of L LE observed. Pt needed max assist for head and trunk control in supported sitting, but tolerated well
OT	1/15-He tolerated bed level ROM and supported sitting EOB today with VSS throughout. Demonstrates increased stiffness of L side (LE>UE) but demonstrated trace activation of L arm in sitting. He opened L eye in supported sit and appeared to attempt to locate family to voicing. 1/18- not following commands, hand splint- ankle splint?
ST	Will see 1/18
Social	SW involved; can discharge with parents – no restrictions
Equipment	TBD
Additional	Discuss timing of Neuropsychology consult
Plan	TBD/AIR (between AIR A and AIR B)

REACH Timeline



Rehabilitation Education and Care Hub

Physical Therapy

Evaluation Completed Day 9

- Decreased strength L>R side, active movement of R UE and R LE through partial range, AAROM with L UE through partial range
- No active movement of L LE
- Increased tone L side (UE and LE)
- Decreased functional mobility, decreased sitting balance
- Max assist for head and trunk control in supported sitting
- Inconsistently followed commands

Interventions (5-6x/week)

- Nighttime stretching splint for L ankle
- Therapeutic Exercises/Activities
- Neuro Re-Ed
- Gait training

Progression

- Initially OOB with mechanical lift to tilt in space wheelchair
- Progressed to stand pivot transfers with min A

Rehabilitation Education and Care Hub

Occupational Therapy

Evaluation Completed Day 9

- Increased stiffness of L side
- trace activation of LUE
- attempted to locate family to voice with L eye
- Functional cognitive impairments.

Assessments and Interventions

- Splinted LUE
- Sitting up with total assist
- Assessing ability to follow commands (absent)
- Able to move RUE/RLE
- Transfers to wheelchair initially via hoyer lift
- giving thumbs up/down to communicate
- Working on balance during functional activities

Progression

- Pt completing stand pivot transfers with mod-max assist, basic hygiene with mod assist, using RUE to assist LUE for other ADLs such as dressing, improving functional cognition

Speech Therapy

Evaluation Completed Day 12

- Significant for minimal alertness
- Oral loss of secretions
- No palpable swallow with stimuli
- Eye opening without tracking

Assessments and Interventions

- Swallow assessedeery 2-3 days
- Positional modifications, limited oral trials initially
- Assesment of oral motor pattern, spontaneous swallows
- Communication- non-verbal > verbal
- Family education
- Auditory comprehension
- Visual, verbal and tactile cueing
- FEES completed day 23, cleared for thin liquid and puree, but remained GT dependent

Progression

- Inconsistent labial closure with moderate oral loss impulsivity, required 1:1 assist with eating and drinking, able to follow basic commands and respond using gestures for yes/no questions, occasional single words

Recreation Therapy

Recreation Therapist was not on the REACH team at time of this patient's admission.

Below is an outline of what the LRT would have focused on with patient.

- Develop personalized goals with patient to address his physical, cognitive, emotional, social, and leisure needs.
- Work with patient to identify leisure interests, new barriers to participation, and ways to adapt activities to fit his needs.
- Discuss patient's current coping strategies and facilitate hands-on sessions to practice new coping skills.
- Work with patient and family to identify community resources available to them upon discharge.

Physical Medicine & Rehabilitation

Day 13 Initial Consult Recommend initiation of gabapentin to help with irritability, pain, and PSH.

Day 14 Recommend increasing scheduled propranolol and decreasing prn propranolol

Day 15

- Recommend starting amantadine
- Recommend increasingscheudled propranolol and decreasing prn
- Recommend starting baclofen
- Discussed and Educated family on AIR, Coordinated session with Neuropsychologist

Day 16 Consider increasing amantadine depending on tolerance

Day 19 Met with family, continue current recommendations

Day 26

- Recommend increasing amantadine
- Recommend weaning scheduled and PRN clonidine

Neuropsychology

Initial Inpatient Evaluation Day 15

- Family interview including developmental, social, psychiatric and academic history
- Provided recommendations for his recovery level including:
  - Rotation of preferential sensory stimulation recommended
  - Having sensitive discussions outside of the room
  - Daily review of orientation information
  - Limiting question asking until he is fully oriented
- Recommended outpatient evaluation 2-3 months after discharge home

Post-Acute

Discharged to AIR Day 28

Nurse Coordinator

- Communicated with receiving AIR coordinator
- Educated family on transition
- Ensured outpatient follow up appointments and referrals had been arranged
- Followed up with family after transition
- Acted as point of contact for family

Outpatient Services Post-AIR

PT/OT/ST for ongoing therapy

Outpatient Neuropsychology Evaluation (Day 91):

- Not yet enrolled in homebound school
- Sleeping 3-5 hours per night only
- Ongoing deficits in orientation and attention, but intact verbal reasoning
- Tolerated 45 min of testing, but became agitated on the way home
- Recommended contacting MD for sleep, homebound schooling, re-evaluation in 6 months

PM&R ongoing medication and equipment management

Audiology (Tinnitus, Hearing assessment)

Surgery (G-Tube)

Readmission for VP shunt (Day 120)

Thank You!