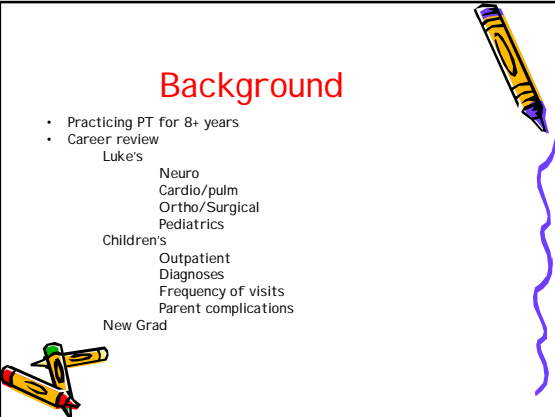



Pediatrics


Applications in the Clinical Setting
Presented by: Andrea Thorne, PT



Background

- Practicing PT for 8+ years
- Career review
 - Luke's
 - Neuro
 - Cardio/pulm
 - Ortho/Surgical
 - Pediatrics
 - Children's
 - Outpatient
 - Diagnoses
 - Frequency of visits
 - Parent complications
 - New Grad







Case Studies



Child 1

- A 12 y/o male with Left patellafemoral pain syndrome and quad atrophy
- Excellent athlete: Jr Olympics for track and field 2 time
- Two month history of pain that originated during football season following a tackle
- Running/jumping increase discomfort - decreases with swimming
- He has stopped working-out and took a season off from track and field due to a left foot injury that remains painful upon palpation. (He has not been to a MD regarding this issue.



PT to eval and treat

Eval findings:



- MMTs

	L	R
• Hip Extension	4	4
• Hip Flexion	4	4+
• Hip Adduction	4+	5
• Hip Abduction	4	5
• Knee Extension	3+	5
• Knee Flexion	5	5






Eval findings:

- Balance: decreased SLS on the left with increased ankle strategy
- Ober's test: tight right TFL-ITB
- Hamstrings: R= -15 degrees, L= -10 Degrees
- Gait: poor eccentric control = Foot slap and knee extension on the left






Treatment:



Treatment:
(1-2 times a week for 1 month)

- Bike
- Heel toe raises on stairs
- Heel toe walking (flippers)
- Bose ball squats
- Lunges
- Swissball (heel toe raises with wt on LEs, Toe raises with ball btw chest and wall)
- Snatch lift
- Exaggerated Marching
- Triangle hop





Child 2

- A nine month old female Twin B born at 36 weeks gestation - weighing 4.1 #. Hospitalized 10 days requiring NG tube only.
 - rolling at 5 months
 - sitting at 7.5 months
 - crawling at 8 months
 - currently is pulling to stand

**able to transition independently into all of these positions

Mom's chief complaint is "Does not sit right" and she quickly starts to compare the patient to her twin.

PT to evaluate for developmental delay



Eval findings:

- No MMTs secondary to her age and level of comprehension
- Battelle Developmental inventory = scored at a 9 month level (adjusted age is 8 months)



Treatment:



Treatment: (monthly)

- Teach parents to facilitate normal movements continue to monitor (sitting, crawling, stairs)



Child 3

- An 8 y/o female sustained a right mid-shaft tibia/fibula fracture when she was struck by a motor vehicle.
 - She was initially placed in a long leg cast following the accident and TTWB.
 - Changed to a short leg cast 12/09/08 with her weight-bearing level changed to WBAT. --Relies on the wheelchair for 100% of her mobility.
 - No complaints of pain or discomfort.
- PT for Gait training, WBAT, instruction in HEP



Eval findings

- All strength WNL, sensation WNL, movements WNL
- She is fatigued with ambulation of 300+ feet with crutches.
- Able to push through it, yet request breaks throughout.
- Able to improve her gait pattern and posture with cueing and repetition.
- Able to place weight on her right without complaints of discomfort.
- Movements with the crutches are awkward and stiff.



Treatment:



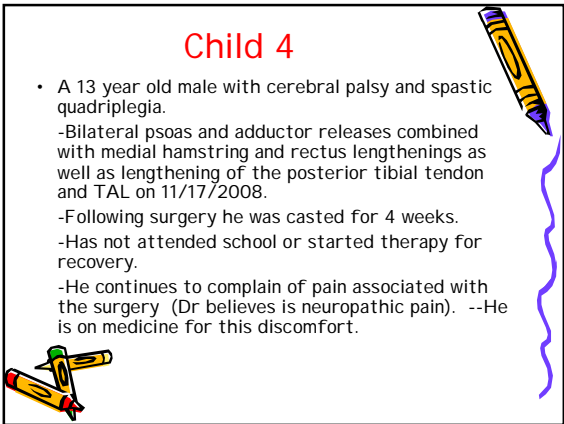
Treatment:
(weekly 1-2 months)

- Cancelled first three sessions
- Resume normal activities



Child 4

- A 13 year old male with cerebral palsy and spastic quadriplegia.
 - Bilateral psoas and adductor releases combined with medial hamstring and rectus lengthenings as well as lengthening of the posterior tibial tendon and TAL on 11/17/2008.
 - Following surgery he was casted for 4 weeks.
 - Has not attended school or started therapy for recovery.
 - He continues to complain of pain associated with the surgery (Dr believes is neuropathic pain). --He is on medicine for this discomfort.

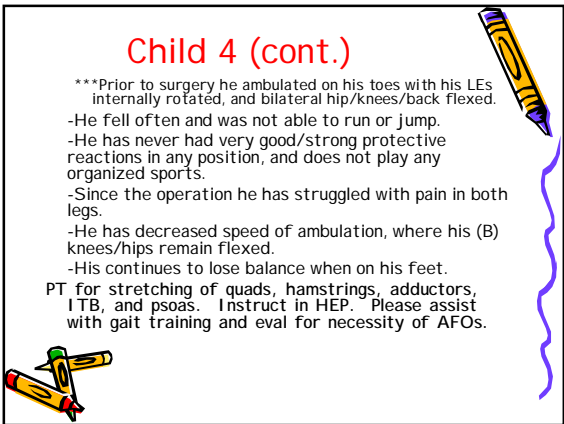


Child 4 (cont.)

***Prior to surgery he ambulated on his toes with his LEs internally rotated, and bilateral hip/knees/back flexed.

- He fell often and was not able to run or jump.
- He has never had very good/strong protective reactions in any position, and does not play any organized sports.
- Since the operation he has struggled with pain in both legs.
- He has decreased speed of ambulation, where his (B) knees/hips remain flexed.
- His continues to lose balance when on his feet.

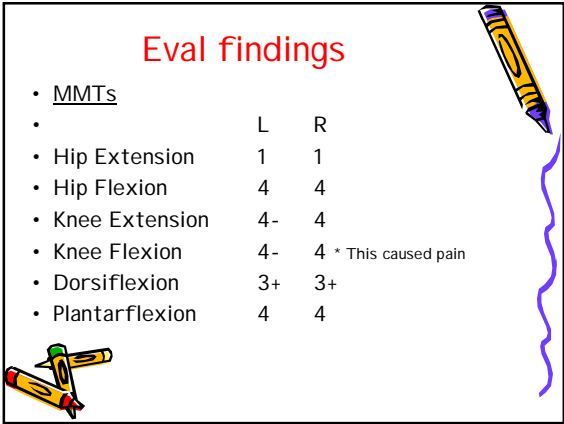
PT for stretching of quads, hamstrings, adductors, ITB, and psoas. Instruct in HEP. Please assist with gait training and eval for necessity of AFOs.



Eval findings

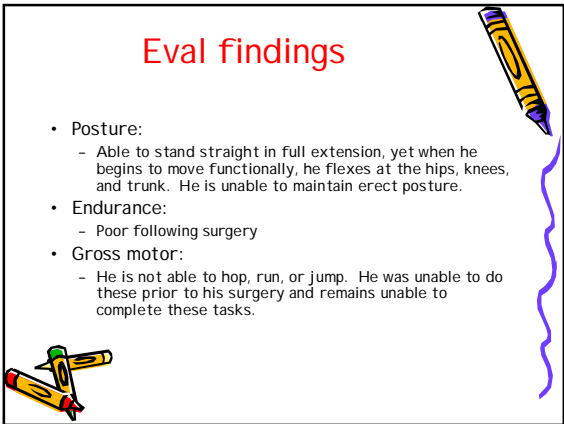
- MMTs
-

	L	R
• Hip Extension	1	1
• Hip Flexion	4	4
• Knee Extension	4-	4
• Knee Flexion	4-	4 * This caused pain
• Dorsiflexion	3+	3+
• Plantarflexion	4	4



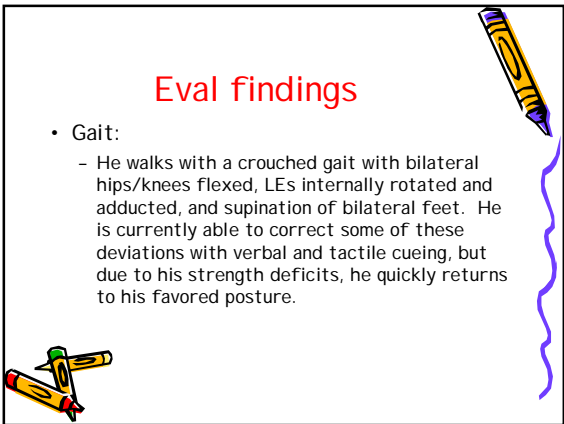
Eval findings

- Posture:
 - Able to stand straight in full extension, yet when he begins to move functionally, he flexes at the hips, knees, and trunk. He is unable to maintain erect posture.
- Endurance:
 - Poor following surgery
- Gross motor:
 - He is not able to hop, run, or jump. He was unable to do these prior to his surgery and remains unable to complete these tasks.

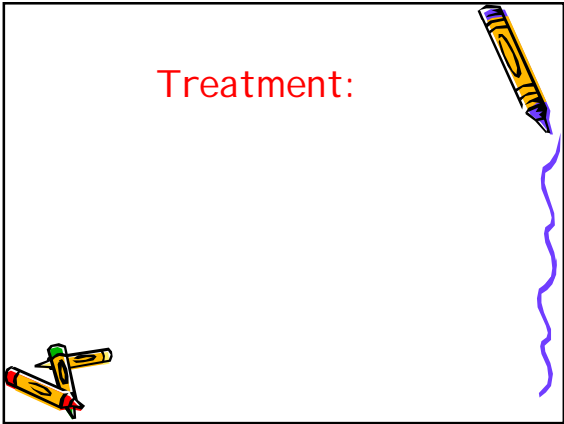


Eval findings

- Gait:
 - He walks with a crouched gait with bilateral hips/knees flexed, LEs internally rotated and adducted, and supination of bilateral feet. He is currently able to correct some of these deviations with verbal and tactile cueing, but due to his strength deficits, he quickly returns to his favored posture.



Treatment:



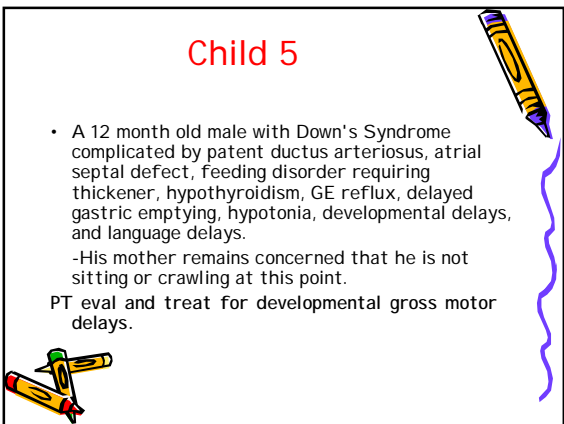
Treatment:
(1-2 times a week for 8 weeks)

- Quad and hamstring stretches
- Bridges
- Heel/toe raises
- Gluts on Swiss ball
- Step-ups
- Sitting balance on Swiss ball
- Squats
- UE/ LE bike
- Tall kneeling
- Floor to stand transfers
- Stool Scooting



Child 5

- A 12 month old male with Down's Syndrome complicated by patent ductus arteriosus, atrial septal defect, feeding disorder requiring thickener, hypothyroidism, GE reflux, delayed gastric emptying, hypotonia, developmental delays, and language delays.
-His mother remains concerned that he is not sitting or crawling at this point.
PT eval and treat for developmental gross motor delays.



Eval findings

- -Generalized low tone
- -No MMTs secondary to his age and level of comprehension
- -Battelle Developmental Inventory, developmental age of 4 months (CA =12 mos, AA = 12 mos) --He is able to perform the following age appropriate skills: rolling right and left, commando/army crawl, and transition from sitting to prone independently.



Treatment:



Treatment:

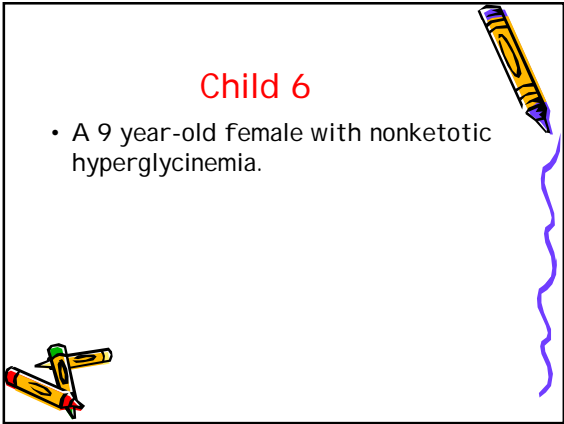
(weekly - reassess in three months)

- Hip helpers
- SMO
- Developmental play positions
- Transition work
- Stairs
- Stance
- Swiss ball



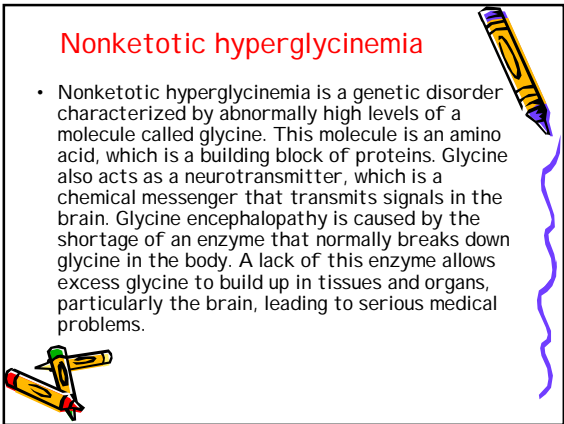
Child 6

- A 9 year-old female with nonketotic hyperglycinemia.



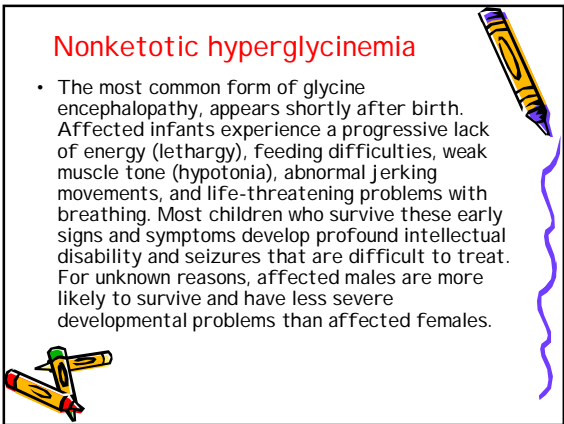
Nonketotic hyperglycinemia

- Nonketotic hyperglycinemia is a genetic disorder characterized by abnormally high levels of a molecule called glycine. This molecule is an amino acid, which is a building block of proteins. Glycine also acts as a neurotransmitter, which is a chemical messenger that transmits signals in the brain. Glycine encephalopathy is caused by the shortage of an enzyme that normally breaks down glycine in the body. A lack of this enzyme allows excess glycine to build up in tissues and organs, particularly the brain, leading to serious medical problems.



Nonketotic hyperglycinemia

- The most common form of glycine encephalopathy, appears shortly after birth. Affected infants experience a progressive lack of energy (lethargy), feeding difficulties, weak muscle tone (hypotonia), abnormal jerking movements, and life-threatening problems with breathing. Most children who survive these early signs and symptoms develop profound intellectual disability and seizures that are difficult to treat. For unknown reasons, affected males are more likely to survive and have less severe developmental problems than affected females.



Child 6

- She was diagnosed with nonketotic hyperglycinemia in infancy.
- Written up in the New England Journal of Medicine
- She began experiencing tonic-clonic seizures at 2 months of age.
- She is currently followed by neurology and has had abnormal EEGs, however she has not had clinical seizures since 4 years of age.
- She does experience continuous myoclonic jerks.
- She was noted to be osteopenic, confirmed by bone density scan in 2004.
- She recently suffered a left proximal femur fracture for which she was placed in a spica cast under anesthesia on 9/20/2007.



Child 6

- She underwent a laparoscopic g-tube placement for weight loss with poor feeding in January of 2002.
 - She currently eats orally and supplements with formula.
 - She had an EGD for frequent vomiting in September of 2005.
 - In addition to the information mentioned above, she is developmentally delayed and has had multiple dental surgeries in her past medical history.
- PT to see eval and treat



Eval findings

- Sensation:
 - Her sensation is difficult to test secondary to her level of comprehension and command follow.
 - Calms with deep pressure along her trunk and appears to have normal sensation within her limbs.
- Balance:
 - Balance and righting reactions are all poor due to her low level of visual input and ability to statically hold positions.



Modified Ashworth Scale

- 3 on lower extremities and 2 on upper extremities

Modified Ashworth Scale Definition:

2 = More marked increase, 3 = Considerable increase



Eval findings

- Strength was difficult to evaluate due to her frequent dystonic movements - noted in all four extremities
- She shows a left-sided preference with hand usage and mobility.
- She has been diagnosed with scoliosis (with a rotational component) and wears a back brace intermittently throughout the day and night. Without the brace, she sits with a thoracic kyphosis and forward head.

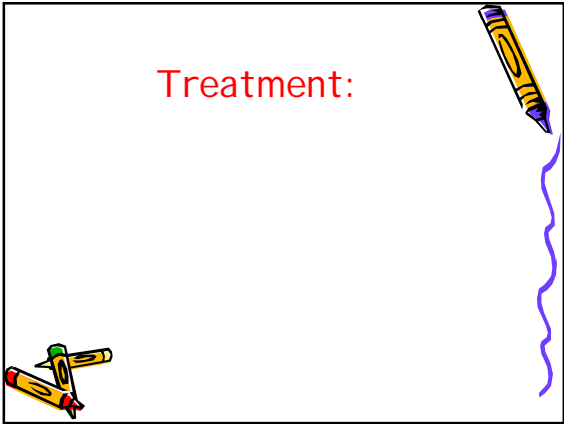


Eval findings

- Primary mobility is within a wheelchair that she does not have the ability to mobilize independently.
- She has a stander that she uses approximately one hour daily, yet is dependent for stance and all other transitions.
- Once positioned she is able to sit for 20-30 seconds without outside assist required.
- She is independently able to roll right and left to explore her surroundings
- When placed in POE, she can lift her head 45 degrees to scan her environment.
- In supine, she will lift her head and shoulder blades off of the surface 30 degrees also for scanning.



Treatment:

A box containing the word "Treatment:" in red text. In the bottom-left corner, there are three crayons (yellow, green, and red). In the top-right corner, there is a drawing of a yellow crayon with a blue wavy line extending downwards from its tip.

Treatment:
(Weekly - reassess 3 months)

- Developmental activities
- Command Follow
- Aquatic Therapy
- Power Chair

A box containing the word "Treatment:" in red text, followed by "(Weekly - reassess 3 months)" in red text. Below this is a bulleted list of four items: "Developmental activities", "Command Follow", "Aquatic Therapy", and "Power Chair". In the bottom-left corner, there are three crayons (yellow, green, and red). In the top-right corner, there is a drawing of a yellow crayon with a blue wavy line extending downwards from its tip.

Thank you!!

A box containing the text "Thank you!!" in red text. In the bottom-left corner, there are three crayons (yellow, green, and red). In the top-right corner, there is a drawing of a yellow crayon with a blue wavy line extending downwards from its tip.
