

Precautions in PT Treatment of Neurological Disorders

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Shunt Malfunction

Consider for children with Spina Bifida, Dandy Walker Syndrome, Cerebral Palsy

General Symptoms:

- Drowsiness
- Headache
- Vomiting
- Irritability

Symptoms in Infants:	Symptoms in Toddlers:
<ul style="list-style-type: none">• Enlargement of the baby's head• Fontanelle is full and tense when the infant is upright and quiet• Prominent scalp veins• Swelling and/or redness along the shunt tract• Vomiting• Irritability• Sleepiness• Downward deviation of the eyes• Seizures• Frontal bossing	<ul style="list-style-type: none">• Vomiting• Headache• Vision problems• Irritability and/or tiredness• Personality change (may need to rely on parent reports)• Seizures• Difficulty in waking up or staying awake

Implication = immediate referral to ED (to do a shunt series); could be life-threatening if untreated

Muscle Breakdown

Consider for children with Muscular Dystrophy

General Symptoms:

- Dark golden or brown urine indicating excess protein in urine

Implication = reduce activity to avoid over-exertion, incorporate more rest breaks, avoid eccentric muscle contractions

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Atlantoaxial Instability Syndrome

Consider for children with Down Syndrome

Occurs in 10-30% of children with DS and symptomatic in 1-2%

Significant neurologic signs indicate spinal cord damage already occurring

Risk for sublaxation and spinal cord impingement resulting in neurological deficits

Recommended for children with DS to have initial cervical and neurological exam between 2-3 yo; positive findings (> 4.5 mm) indicate annual or semiannual exam

General Symptoms:

- Neurological signs and symptoms

Implication = immediate referral to doctor (for possible posterior cervical fusion and/or management of spinal cord damage); could be life-threatening

Precautionary implication for all children with Down Syndrome = avoid exaggerated neck flexion, extension, and rotation positions, avoid forceful twisting and turning of the head, avoid joint approximation and compression, avoid high impact sports and jumping

Intrathecal Baclofen Withdrawal Syndrome

Consider for children with Spina Bifida, Dandy Walker Syndrome, Cerebral Palsy

General Symptoms:

- Increase or return in spasticity/ muscle rigidity
- Myalgias (muscle pain)
- Seizures
- Itching
- Low blood pressure
- Hypertension, tachycardia, hyperthermia
- Lightheadedness
- Tingling sensation
- Fever
- Altered mental status
- Confusion
- Visual Hallucination

Implication = immediate referral to ED (for medical management and ultimately to correct Baclofen dose); rare but could become life-threatening

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Arnold-Chiari Malformation

Consider for children with Spina Bifida

Most kids with Spina Bifida have ACM even if they are not symptomatic

Defined as downward displacement of the medulla and brainstem through the foramen magnum with associated kinking of the brainstem

Hydrocephalus causes pressure that pushes brainstem down

Majority of children who exhibit ACM on MRI are not symptomatic

General Symptoms:

- Breathing difficulties
- Feeding and swallowing difficulties
- Issues with temperature regulation

Implication = immediate referral to ED if they are symptomatic (for decompression surgery to remove bone in order to relieve pressure)

References:

1. Howes, C. et al. University of North Carolina at Chapel Hill DPT Down Syndrome and Other Genetic Disorders Lecture. 2019.
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4. Leshin, L. Atlantoaxial Instability & Down Syndrome. National Down Syndrome Society Website. <https://www.ndss.org/resources/atlantoaxial-instability-syndrome/> Updated January 14, 2000. Accessed April 16, 2019.
5. Swaminathan, A. Baclofen Withdrawal. Rebel EM Website. <https://rebelem.com/baclofen-withdrawal/> Updated October 27, 2016. Accessed April 16, 2019.