

Children’s Hospital Of Wisconsin

Co-Management Guidelines

To support collaborative care, we have developed guidelines for our community providers to utilize when referring to, and managing patients with, the pediatric specialists at Children’s Hospital of Wisconsin. These guidelines provide protocols for jointly managing patient cases between community providers and our pediatric specialists.

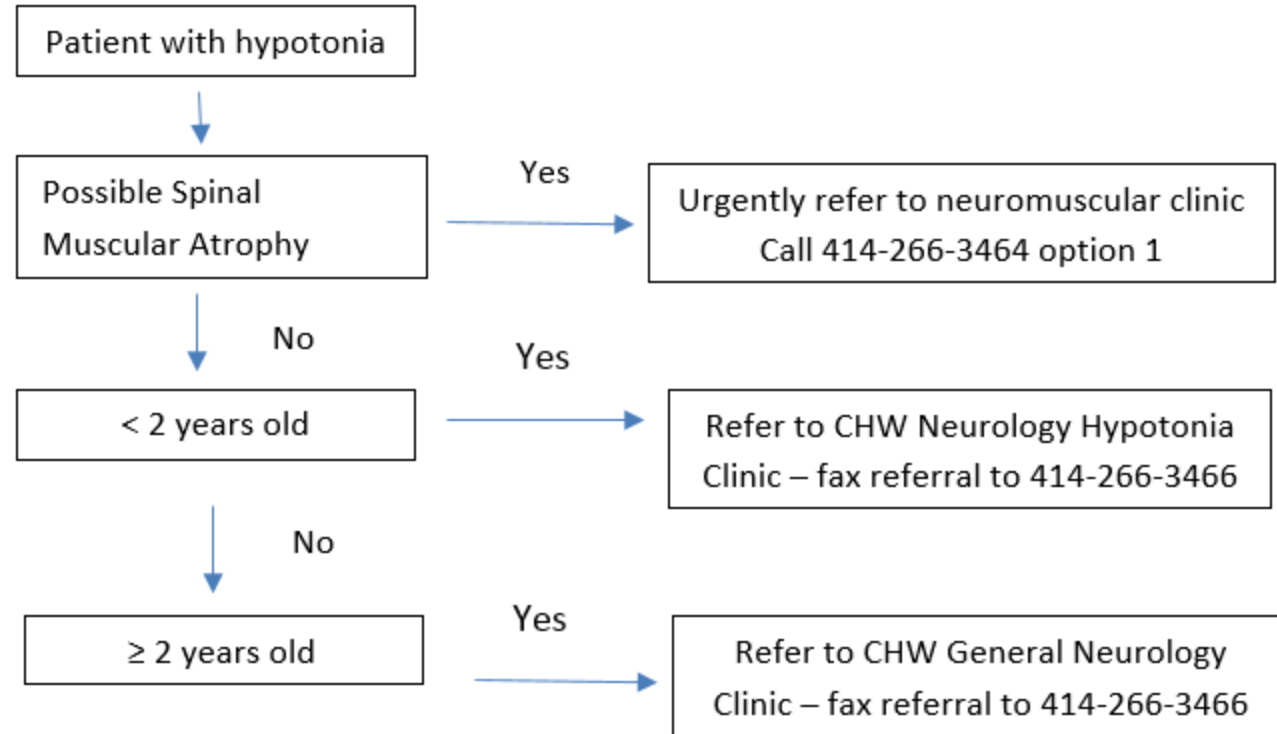
<h2>Hypotonia</h2>				
A full physical examination, with specific attention to the neurologic examination, is important for any child with concerns for hypotonia. The importance of differentiating between tone and strength is important for making an appropriate diagnosis. Tone is the resistance of muscles to passive elongation or stretch. This resistance is created by the resting state of contraction in the muscle. This translates clinically to increased ease by the examiner to passively move the patient’s extremity in the infant who is hypotonic. Strength is the force generated by active movement of the extremity. Hypotonia and weakness are neither mutually inclusive nor exclusive.				
Diagnosis/symptom	Referring provider’s initial evaluation and management:	When to initiate referral/ consider refer to Neurology Clinic:	What can referring provider send to Neurology Clinic?	Specialist’s workup will likely include:
<p>Signs and symptoms</p> <ul style="list-style-type: none"> • The classic “frog-leg” positioning when supine or extended arms or legs at rest can give an initial sense of hypotonia and the body parts involved • Excessive head lag for age <ul style="list-style-type: none"> ○ In a newborn, one can expect a lag of the head but upon presenting to the full sitting position should have a slight delay before the head will fall to one direction. This should be resolving until 2 months when the patient should have little to no head lag upon pulling to sit. • Positive scarf sign <ul style="list-style-type: none"> ○ With infant in a supine position, grasp one hand and pull it across their chest. In normal tone in the shoulder of a term infant, the elbow can be brought but not cross midline of the infant’s chest and chin. Hypotonia is noted if the elbow crosses midline. Not as sensitive in children born prematurely 	<p>Diagnosis and Treatment</p> <ul style="list-style-type: none"> • Perform a thorough history and physical examination. On history pay specific attention to birth history (in particular for any factors predisposing the child to HIE), developmental history and family history. On physical exam pay specific attention to mental status, tone, strength and reflexes • Referral to Birth to 3 if significant hypotonia or any concern for developmental delay • If strength is also decreased, reflexes decreased or absent, family history of neuromuscular disorders or other concerns for peripheral nervous system involvement consider obtaining 	<p>When to Refer</p> <ul style="list-style-type: none"> • When etiology for hypotonia is not known • If have any suspicion for spinal muscular atrophy please refer urgently to neuromuscular (call 414-266-3464, option 1 to facilitate) • Regression of skills or progressive hypotonia or weakness • Absent reflexes • If patient is less than 2 years old • When other neurologic signs or symptoms also present such as seizures, movement disorders, cognitive delay, etc 	<p>1. Using Epic</p> <ul style="list-style-type: none"> • Please complete the external referral order <p>In order to help triage our patients and maximize the visit, the following information would be helpful include with your referral order:</p> <ul style="list-style-type: none"> • Urgency of the referral • What is the key question you would like answered? <p>Note: Our office will call to schedule the appointment with the patient.</p> <p>2. Not using Epic external referral order:</p> <ul style="list-style-type: none"> • In order to help triage our patients maximize 	<p>After referral to Neurology Clinic:</p>

<ul style="list-style-type: none"> • Vertical Suspension <ul style="list-style-type: none"> ○ The infant is suspended in the examiners hands with placement of the hands in the axilla. If the infant is able to be held without significant pressure on the chest or rib cage, the tone is normal. A feeling of the infant “slipping” through the fingers or need to place pressure on the infant’s chest to maintain the infant illustrates low tone. • Horizontal Suspension <ul style="list-style-type: none"> ○ Lift the infant off the table by 1 hand under the chest and abdomen. The normal tone term infant will keep the arms and legs flexed with the head lifted above horizontal for a period of time. In a term infant who indefinitely holds the body above the horizontal plane, hypertonia should be considered and in the term infant who cannot or minimally hold the body above the horizontal plane, hypotonia is a concern. • Reflexes <ul style="list-style-type: none"> ○ Absent or decreased reflexes are concerning for a neuromuscular etiology ○ Increased reflexes are more likely to be a central nervous system etiology • Comorbid seizures or sleep/wake cycle abnormalities correlate more with central nervous system processes • If tongue fasciculations present, consider neuromuscular etiologies, in particular SMA 	<p>labs for CK, aldolase, CMP and CBC</p> <ul style="list-style-type: none"> • If systemic features suggestive of thyroid dysfunction or abnormal newborn screening for congenital hypothyroidism, consider TSH and free T4 and/or referral to endocrinology <p><u>Treatment</u></p> <ul style="list-style-type: none"> • Dependent upon the history and diagnosis there may be treatments, the earlier treatments are started the more likely they are to be beneficial to the patient • At same time evaluating etiology, refer to physical and/or occupational therapy through either the Birth to 3 program or private therapies 		<p>the visit time, please fax the above information to (414-607-5288)</p> <ul style="list-style-type: none"> • It would also be helpful to include: <ul style="list-style-type: none"> • Chief complaint, onset, frequency • Recent progress notes • Labs and imaging results • Other Diagnoses • Office notes with medications tried/failed in the past and any lab work that may have been obtained regarding this patient’s problems. 	
<p><u>Causes</u> Hypotonia in an infant can be from various causes with a wide variety of treatments and, more importantly, outcomes for the child.</p>				

- Hypoxic ischemic or hemorrhagic injury encompasses 34% of all infantile hypotonia.
- Hypotonic infants tend to present before 1 month of age (80%) with only a small percentage (5%) after 6 months of age
- Etiology of Infant Hypotonia ¹

Cause	Percentage
Hypoxic/Ischemic or Hemorrhagic Injury	34%
Chromosomal	26%
Neuromuscular	18%
CNS Malformation	13%
Metabolic or Endocrine Disease	9%

Referral algorithm



Resources

Laugel V, Cossee M, Matis J, de Saint-Martin A et al. Diagnostic approach to neonatal hypotonia: retrospective study of 144 neonates. *Eur J Pediatr*. 2008;167:517-523.

Birdi K, Prasad AN, Prasad C, Chodirker B, Chudley AE. The floppy infant: retrospective analysis of clinical experience (1990–2000) in a tertiary care facility. *J Child Neurol* 2005; 20: 803–08.

Lisi E, Cohn R. Genetic evaluation of the pediatric patient with hypotonia: perspective from a hypotonia specialty clinic and review of the literature. *Dev Med Child Neurol* 2011;53(7):586-599.