

Fast facts

- Over 50% of preterm infants weigh less than the 10th percentile at hospital discharge
 - The accrual of certain nutrients, specifically protein, calcium, phosphorus, and zinc, happens during pregnancy at the end of the 3rd trimester. Therefore, preterm infants have an extra need for these nutrients in addition to calories for bone health, brain development, and overall growth

Background

Preterm delivery disrupts the supply of nutrient stores and increases nutritional demands for growth and development. These infants are at higher risk of adverse developmental disabilities including but not limited to cerebral palsy, poor psychomotor, cognitive skills, and growth delay. Optimal nutrition during their stay in the NICU as well as after hospital discharge is essential to maintain adequate growth that prevents long term morbidities and promotes healthy neurodevelopment in preterm infants. It is critical for premature infants to be monitored closely after discharge to ensure they are meeting their nutritional needs and experience catch-up growth.

Assessment

- Monitor anthropometric measurements at each visit including head circumference, length, and weight after discharge from the NICU and pay close attention to percentiles and z-scores
- Length measurements should be done appropriately with measuring board
- Track growth on FENTON growth chart for preterm infants up to 48 weeks corrected age then transition to WHO growth chart using corrected age to assess weight parameters until 2 years of age.

Red flags

Significant decline in percentile ranking (crossing 2 percentiles) or weight for age z-score, or weight-for-length z-score ≤ -1.00 , or simply <20 g/day average weight gain

Management/treatment

Note: Infants discharged from CHoR will have a discharge nutritional plan included with discharge documents.

- Breastmilk is the number one preferred source of nutrition for preterm infants
- Majority of preterm infants will be discharged on 22-24kcal feeding regimens: including breastmilk fortified with Human Milk Fortifier or NeoSure formula powder, or concentrated preterm formulas such as NeoSure and EnfaCare.
- Preterm infants should remain on fortified maternal breastmilk or preterm formula regimen for a minimum of 6 months corrected age and high-risk infants (e.g., h/o extreme prematurity, poor growth) may likely need to continue post discharge diet until 12month of corrected age to support adequate growth.
 - Fortification of breastmilk with Human Milk Fortifier is not indicated past 3 months corrected age
 - Preterm infants who demonstrate catch-up growth quickly after discharge can be changed to a standard term formula at 48-52 weeks of age IF weight and length (for corrected age), and weight-for-length are all ≥ 25 ile for age
- Determining caloric management of formula based on growth progression:
 - If decreased weight (<20 g/day) while consuming adequate volume; increase calories in formula (i.e. 20 to 22 or 24 Kcal/oz, 22 to 24Kcal/oz or 24 to 27 Kcal/oz)
 - If adequate weight gain (30-35g/day) with adequate length; continue current diet

- After corrected age of 3 month, if weight gain continues to be > 30 g/day with inadequate length; recheck accuracy of length measurements and then decrease calories
- Continue multivitamin with iron until infant is consuming 32oz of formula per day or until 12 months corrected age while consuming breastmilk

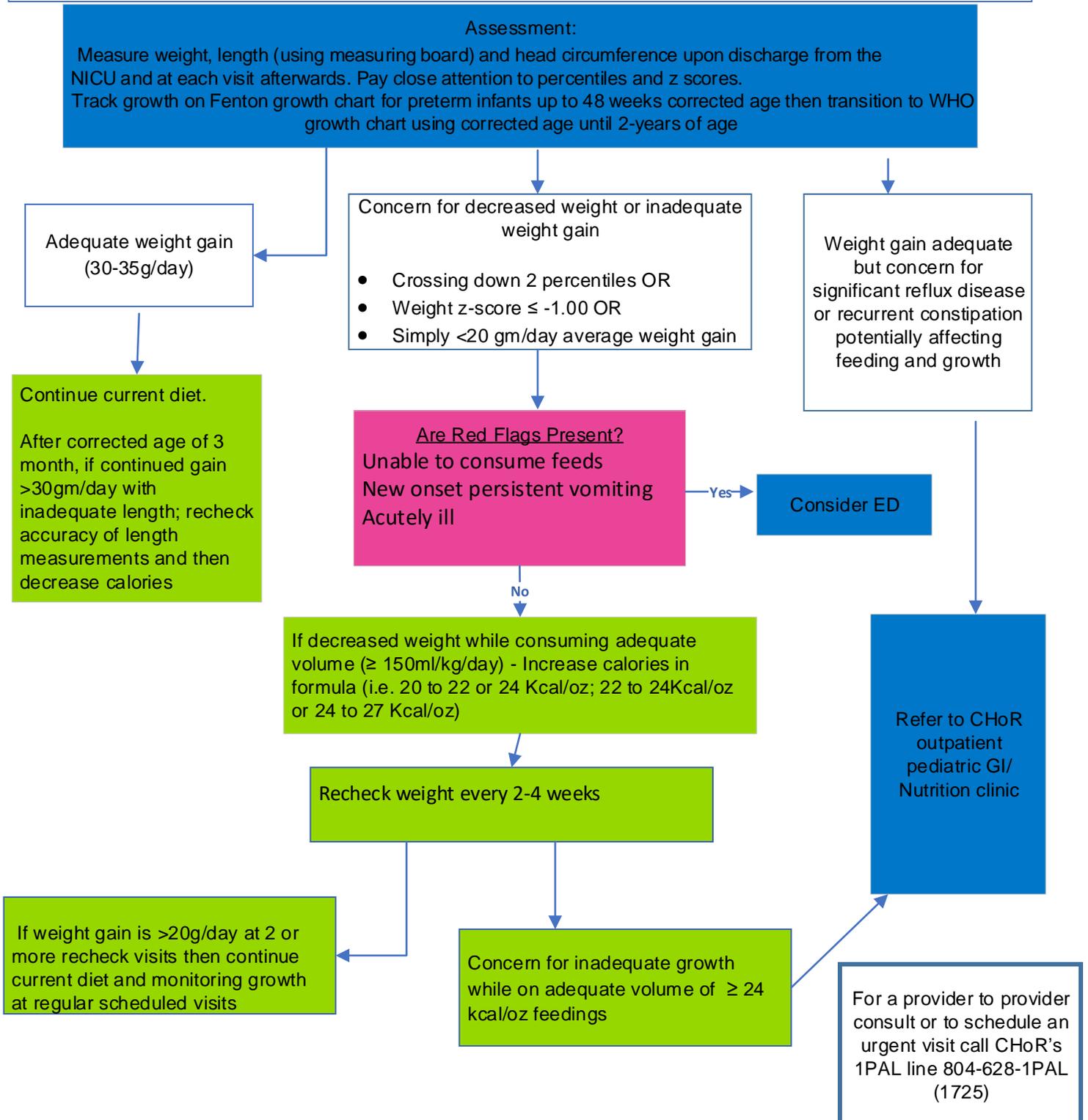
When to refer

Please refer the following infants for further evaluation and management to CHoR outpatient pediatric GI/nutrition clinic

- Infants with growth failure while on adequate volume of ≥ 24 kcal/oz feedings ,
- Infants with significant reflux disease, or recurrent constipation affecting feeding or growth
- Any preterm infant presenting with failure to thrive requiring inpatient admission to CHoR

Nutrition in the Pre-term Infant

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Most Common Recipes for Increased Caloric Density of Human Milk and Formulas

	Caloric Density	Small Batch	Medium Batch	Large Batch
HMF	22 kcal/ounce breast milk with HMF	50 ml breast milk + 1 packet (5 ml) HMF		
	24 kcal/ounce breast milk with HMF	50 ml breast milk + 2 packets (10 ml) HMF		
NeoSure	22 kcal/ounce breast milk with NeoSure	3 ounces breast milk + ½ teaspoon	5 ounces breast milk + 1 teaspoon	16 ounces breast milk + 1 Tablespoon
	24 kcal/ounce breast milk with NeoSure	4 ounces breast milk + 1 ½ teaspoons	8 ounces breast milk + 1 Tablespoon	16 ounces breast milk + 2 Tablespoons
	22 kcal/ounce NeoSure	4 ounces water + 2 scoops	8 ounces water + 4 scoops	20.5 ounces water + 1 cup (this makes 23 ounces)
	24 kcal/ounce NeoSure	3.5 ounces water + 2 scoops	7 ounces water + 4 scoops	18.5 ounces water + 1 cup (this makes 21 ounces)