

Randall Children's Hospital

Co-Management and Referral Guidelines

Nutrition Management of Preterm Infants After Hospital Discharge

Randall Children's Newborn Services

Introduction

Preterm infants, and extremely premature infants in particular, have special growth and nutritional needs, even after discharge from the hospital. Determining the appropriate management strategies for preterm infants after discharge can be challenging. The following are broad guidelines. For any questions or concerns, contact a dietitian to help guide the outpatient feeding plan.

Evaluation and Management

Expected growth velocity

- The goal for weight gain for babies after reaching a corrected age of 40 weeks using the World Health Organization (WHO) growth chart is 30–35 grams per day for the first two months. Weight gain should be assessed in relation to status on the growth chart. As the baby gets older, weight velocity will decrease.
- Weight, length and head circumference should be monitored on the Fenton growth curve while hospitalized and using the World Health Organization (WHO) growth curves after discharge.
- The goal for all anthropometric measurements is to follow along the birth percentiles, or to catch up to the birth percentile if the baby's growth has been compromised. If the infant was born small for gestational age (below the 10th percentile), the goal may be to reach the 10th percentile on the growth chart.

Use of Fortified Feeds — breast milk or formula with added powdered formula to increase the caloric and nutritional density

- Fortification is used for preterm infants (generally <34 weeks gestational age or less than 2 kg at birth) who need extra nutrition for growth or for other infants who struggle to take adequate volume to support their growth.
- Most preterm babies are able to transition to unfortified feeds around 1–2 months corrected gestational age (CGA: 1–2 months after the baby's "due date" to correct for prematurity). However, each baby should be assessed individually based on key factors below.

Transitional Formulas — used primarily for babies <34 weeks gestational age or less than 2 kg at birth

- Transitional formulas (such as EnfaCare or NeoSure) provide additional calories (22 kcal/oz), protein, vitamins and minerals compared to standard infant formulas. National guidelines recommend the use of these formulas as a transition from preterm formula (used in the hospital) to term formula. The length of time needed for transitional formula varies and each baby should be assessed individually based on key factors below.
- Increased formula concentration may be needed based on nutritional status or intake ability. Common concentrations are 24 and 27 kcal/oz.
- If a baby is having signs of intolerance to the formula, i.e., gas, fussiness and decreased intake of formula, a provider may consider an early switch to a term formula. Note: Soy formula is **not** recommended for premature infants due to decreased absorption of calcium and phosphorus.



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Decreasing fortification or transitioning to term formula

Consider weaning off fortification or transitional formula when you observe:

- Consistent weight gain of at least 30–40 grams/day
- Weight, length and head circumference growth that follows or has caught up to the birth percentile
- Intake consistently ≥ 160 ml/kg/day
- Normal or normalizing lab values (*see lab section*)

Note: Babies who had a prolonged intensive care course or who were born at $< 1,500$ grams or < 32 weeks gestation will have higher nutritional needs and should be managed in conjunction with neonatal dietitians.

How to transition:

- Decrease breast milk fortification by two feeds per day each week. Monitor the baby for adequate growth as fortification is weaned.
- If a combination of fortified breast milk and formula are being used, and the baby is thriving, the fortification of the breast milk can often be stopped sooner due to the extra nutrition in the formula (allowing for easier feeding at the breast).
- If the baby is exclusively formula-fed, decrease or stop fortification and monitor the baby's growth.

Supplemental vitamins and iron

		Multivitamin with iron (MVI)	Iron supplement	Vitamin D supplement
< 34 weeks gestation or < 2 kg birthweight	Breastfed	1 ml daily until 6 months corrected age		Start 400 IU/day when MVI is stopped at 6 months
	Formula-fed	0.5 ml daily until taking at least 1,000 ml formula/day		
> 34 weeks gestation	Breastfed		1 mg/kg/day from 4 months of age until good intake of iron-containing foods	400 IU/day
	Formula-fed		1 mg/kg/day from 4 months of age until good intake of iron-containing foods	400 IU/day
Iron deficiency anemia			2–4 mg/kg/day divided bid–tid; monitor Hgb	

Nutritional labs

- For infants born $< 1,500$ grams, check an alkaline phosphatase, calcium and phosphorus at 2 months CGA to monitor for healthy bone mineralization. The goal is for alkaline phosphatase to be < 500 U/L and calcium and phosphorus to be normal.
- If an infant has been anemic or was discharged on supplemental iron (in addition to an MVI), check hemoglobin and hematocrit to ensure anemia is corrected (monthly if ongoing concern).

When to refer

- Any infant discharged on fortified breast milk should follow up with the Nutrition/Lactation Follow-up Service (seen jointly by a dietitian and lactation consultant).
- Infants discharged on fortified formula (formula with added powdered formula to increase the caloric and nutritional density) should be seen in follow-up with a dietitian.
- If a baby is not growing appropriately, or has abnormal labs, refer to a dietitian.
- If a baby is having feeding difficulties, refer to the Feeding Clinic.

(continued)

Referral process

Randall Children's Newborn Services

Legacy Lactation Services

Nutrition and lactation follow-up service for patients who are breastfeeding or receiving fortified breast milk

Randall Children's Hospital at Legacy Emanuel, Portland

Phone: 503-413-2800

Legacy Good Samaritan Medical Center, Portland

Phone: 503-413-7533

Legacy Meridian Park Medical Center, Tualatin

Phone: 503-692-7509

Legacy Mount Hood Medical Center, Gresham

Phone: 503-674-1719

Legacy Salmon Creek Medical Center, Vancouver

Phone: 360-487-5840

Legacy Silverton Medical Center, Silverton

Phone: 503-873-1513

Randall Children's Pediatric Development and Rehabilitation

Pediatric dietitians and Feeding Clinic

Phone: 503-413-4505

Additional Resources

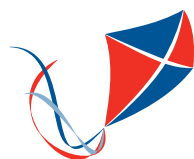
World Health Organization (WHO) growth charts: www.cdc.gov/growthcharts/who_charts.htm

Oregon Pediatric Nutrition Practice Group. Nutrition Practice Care Guidelines for Preterm Infants in the Community, 2013: public.health.oregon.gov/HealthyPeopleFamilies/wic/Documents/preterm.pdf

Infant nutrition mixing instructions and formula descriptions online at www.legacyhealth.org/randallguidelines

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Find this and other co-management/referral guidelines online at www.legacyhealth.org/randallguidelines



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