

Vitamin and Mineral Supplementation – Premature Infants:

Premature Infants receiving “full feeds:” (150 mL/kg)	Adjusted by wt or condition	Vitamin D Goals (IU/day)	Iron* Goals (mg/kg/day)	Vitamin D / Iron or Multi-vitamin
Fortified Breastmilk (EBM+HMF=24) 1 kg (178 IU Vit D, 0.6 mg/kg Fe) 1.5 kg (268 IU Vit D, 0.6 mg/kg Fe) 2 kg (357 IU Vit D, 0.6 mg/kg Fe) 2.5 kg (445 IU Vit D, 0.6 mg/kg Fe)	< 2.5 kg > 2.5 kg	400-1000	2-4	No MV 1 mL D-Vi-Sol 2-3 mg/kg Fe No MV 1 mL D-Vi-Sol (if goal is 800 IU) 2-3 mg/kg Fe
Preterm Formula (SSC24 w/Iron) 1 kg (180 IU Vit D, 2.25 mg/kg Fe) 1.5 kg (273 IU Vit D, 2.25 mg/kg Fe) 2 kg (363 IU Vit D, 2.25 mg/kg Fe) 2.5 kg (455 IU Vit D, 2.25 mg/kg Fe)	< 2.5 kg >2.5 kg	400-1000	2-4	No MV 1 mL D-Vi-Sol** 1-2 mg/kg Fe** None or same**
Fortified Breastmilk or Pre-term Formula (see values above)	If Osteopenia or elevated Alk Phos >800	800-1000	2-4	1-1.5 mL D-Vi-Sol
Human Milk (non-fortified) 2 kg (3 IU Vit D, 0.1 mg/kg Fe) 2.5 kg (4 IU Vit D, 0.1 mg/kg Fe)	< 2.5 kg >2.5 kg	400-1000	2-4	0.5 mL PVS w/Fe + 0.5 mL D-Vi-Sol 1 mL PVS w/Fe
Human Milk +Transitional Formula (EBM+Neo=22 or 24) 2 kg (18 IU Vit D, 0.3 mg/kg Fe) 2.5 kg (22 IU Vit D, 0.9 mg/kg Fe)	< 2.5 kg >2.5 kg	400-800	2-4	1 mL D-Vi-Sol + 2-3 mg/kg Fe 1 mL PVS w/Fe
Transitional Formula (Neosure22) 150 mL/kg x 2.5 kg = 375 mL = 195 IU Vit D, 1.9 mg/kg Fe	< 5 kg or < 750 mLs	400-800	2-4	0.5 mL PVS w/Fe
Term Formula (Similac Advance24) 2 kg (180 IU Vit D, 2.1 mg/kg Fe) 2.5 kg (225 IU Vit D, 2.1 mg/kg Fe)	< 3 kg	400-800	2-4	0.5 mL PVS w/Fe

*If BW < 1000 grams, provide 4 mg/kg Fe (vs. 2 mg/kg.)

**2 kg preterm infant receiving full feeds of preterm formula will not need additional vitamins/minerals via MV drops; ~400 IU Vit D will be provided w/150-160 mL/kg (363 IU-392 IU); however additional D-Vi-sol may be given if goal is > 400 IU Vit D daily; Minimum Fe requirements will be met (2 mg/kg) & no further Fe needed unless goal is > 2 mg/kg Fe.

Vitamin and Mineral Supplementation – Term Infants:

Term Infants receiving “full feeds:” (150 mL/kg)	Adjusted by wt or condition	Vitamin D Goals (IU/day)	Iron* Goals (mg/kg/day)	Vitamin D / Iron or Multivitamin Recommendation
Human Milk	> 2.5 kg < 1 wk in NICU	400	1 (at 4 mos)	1 mL D-Vi-Sol
Human Milk	In NICU > 1 wk, SGA, mult blood draws or < 2.5 g	400	2	0.5-1 mL PVS w/Fe
Term Formula (Similac Advance24)	> 2.5 kg	400	2	None or 0.5 mL D-Vi-Sol***

***Vitamin D goal of 400 IU/day will be met with Term Infant formula once 750 mL intake achieved, which may take several wks; may consider 0.5 mL D-Vi-Sol to make up the difference until 750 mL volume achieved.

Iron: Premature infants are at high risk of Iron deficiency which may have adverse effects on brain development and function as well as overall growth.

Estimated Iron Requirements of a Preterm Infant:

1.4-2 mg/kg/day (assumes 20-27% absorption); this does not account for blood losses or transfusions. VLBW infants lose ~6 mg/kg/wk from phlebotomy. One transfusion adds ~ 8 mg/kg of iron. The combination of Hgb and Ferritin is considered the most sensitive measure of the effects of iron supplementation.

	Newborn	2 mos	4 mos	6-24 mos
Iron overload: serum Ferritin (mcg/L)	> 300	> 300	> 250	> 200
Iron deficiency: serum Ferritin (mcg/L)	< 35	< 40	< 20	< 10-12
Anemia: Hgb (g/L)	< 135	< 90	< 105	< 105

References:

- 1.) Baylor College of Medicine – Guidelines for Acute Care of the Neonate; 21st edition, 2013-2014 / Texas Children’s Hospital Pediatric Nutrition Reference Guide, 10th Edition, 2013.
- 2.) B. Koletzko, et al., Nutritional Care of Preterm Infants – Scientific Basis & Practical Guidelines, 2014.
- 3.) R. Baker, et al., The Committee on Nutrition Diagnosis and Prevention of Iron Deficiency and Iron-Deficiency Anemia in Infants and Young Children (0-3 Years of Age); *Pediatrics* 2010; 126; 104.
- 4.) ESPGHAN Committee on Nutrition Enteral nutrient supply for preterm infants. *J Pediatr Gastroenterol Nutr* 2010; 50:85-91.
- 5.) Abrams S, Committee on Nutrition. Calcium and Vitamin D Requirements of Enterally Fed Preterm Infants. *Pediatrics* 2013; 131; e1676.