Nutrition Guideline
Healthy Infants and Young Children
Post-discharge Preterm Formula (PDPF)

For Professional Reference Only

Applicable to: Nurses, Physicians and Other Health Professionals

Recommendations

The following recommendations address post-discharge preterm formula (PDPF) use for feeding premature infants from hospital discharge until normal growth is achieved, within the first year of life.

- Breastmilk is the optimal milk for preterm infants.
- Upon discharge from hospital preterm infants may require fortification of breastmilk to achieve nutrient needs. PDPF is recommended over term infant formulas because it is a specially formulated product to meet the needs of preterm infants.
- Preterm infants born with a birth weight of ≤1500 grams may benefit from some fortification of breastmilk with PDPF initiated in hospital and continuing after discharge until normal growth is achieved, around 3 months corrected age. If normal growth is not achieved by 3 months corrected age, fortification of PDPF may continue until 6 months and up to 12 months corrected age as needed. If breastmilk is not available, PDPF alone is recommended.
- Preterm infants born with a birth weight of 1500 to 1800 grams demonstrating suboptimal growth may also benefit from some fortification of breastmilk with PDPF, until normal growth is achieved. If breastmilk is not available, PDPF alone is recommended.
- Preterm infants born with a birth weight of >1800 grams demonstrating suboptimal growth may also benefit from some fortification of breastmilk using term infant formula with iron and long chain polyunsaturated fatty acids (DHA and ARA), until normal growth is achieved. If breastmilk is not available, term infant formula with iron and long chain polyunsaturated fatty acids (DHA and ARA) alone is recommended.
- Preterm infants born with a birth weight >1500 grams demonstrating appropriate growth may not need fortification of breastmilk. If breastmilk is not available, term infant formula with iron and long chain polyunsaturated fatty acids (DHA and ARA) is recommended.
- The infants' doctor or dietitian will provide guidance for when the use of PDPF should be discontinued.

Definitions

Chronological/Postnatal age (days, weeks, months or years): time elapsed from birth.[1]

Gestational age (completed weeks): time elapsed between the first day of the last menstrual period and the day of delivery.[1]

Corrected age (weeks or months): chronological age reduced by the number of weeks born before 40 weeks of gestation for children up to 3 years of age who were born preterm.[1]

Preterm infants: an infant born at < 36 completed weeks gestation (< 37weeks 0 days gestation).[2]

Health Benefits

The use of breastmilk supplemented with PDPF or PDPF alone may provide the following benefits:

- Promote optimal growth and accretion of lean body mass.[3,4,5,6,7,8]
- Optimize weight, length, and head circumference (which may contribute to improved neuro-developmental outcome of at-risk preterm infants).[7,8,9,10,11]
- Optimize intake of specific nutrients that preterm infants require in greater amounts than term infants (protein, calcium, phosphorous, zinc, iron, vitamin A and vitamin D).[8,12]
- Optimize bone growth and mineralization during periods of rapid skeletal development.[13,14,15,16,17]
    - Preterm infants are born before the rapid bone growth that occurs in the last trimester of pregnancy. As a result, they need more calcium, phosphorus, and other nutrients (zinc, iron, vitamin A, and vitamin D) than term infants in order to normalize body stores and continue to grow normally.[18]

Key Questions

What are Post Discharge Preterm Formulas (PDPFs)?

- PDPF's are formulas specifically designed for preterm infants which are initiated in hospital and continued as needed after discharge from hospital. They may be added to breastmilk or used alone, if breastmilk is not available.
- PDPF formulas have more calories, protein, vitamins, minerals and trace elements than standard infant formulas.

How are PDPFs used when the preterm infant is breastfeeding?

- It is important to promote and support breastfeeding, as breastmilk is the optimal milk for preterm infants. The PDPF may be added to breastmilk intermittently or the formula may be used alone for a prescribed number of feeds.

Do all preterm infants require PDPF?

- No. Preterm infants born with a birth weight of **>1500 grams and growing well** may be discharged home on breastmilk alone. If breastmilk is not available, term infant formula with iron and long chain polyunsaturated fatty acids (DHA and ARA) alone is recommended. The preterm infants that are at the highest risk for growth failure are those born with a birth weight **≤ 1500 grams.**
- In addition, preterm infants born with a birth weight of **1500 to 1800 grams that are demonstrating suboptimal growth** may benefit from fortification of breastmilk with PDPF until normal growth is achieved.[19] If breastmilk is not available, PDPF alone is recommended.
- Preterm infants born with a birth weight of >1800 grams demonstrating suboptimal growth may also benefit from some fortification of breastmilk with term infant formula with iron and long chain polyunsaturated fatty acids (DHA and ARA) concentrated until normal growth is achieved, not with PDPF. If breastmilk is not available, term infant formula with iron and long chain polyunsaturated fatty acids (DHA and ARA) alone is recommended.

How much PDPF should be added to breastmilk if growth is faltering?

- Volume of supplementation is determined based on individual requirements and assessment by clinicians (MD/RD).[19,20,21]

How long should a PDPF be used?

- The infants' doctor or dietitian will provide guidance for when the use of PDPF should be discontinued.
- Fortification of breastmilk may be discontinued when infants are demonstrating normal growth.
- When infants are not maintaining normal growth at 3 months of age, the fortification of breastmilk with PDPF may continue until 6 months and up to 12 months corrected age as needed.
- Caution should be exercised not to grow children too quickly. Preterm low birth weight infants who gain weight too fast may be at risk for adverse long-term outcomes such as cardiovascular disease, type 2 diabetes, hypertension, obesity and osteoporosis in adulthood.[22,23,24,25]

What are some examples of PDPF's available in Alberta?

- Enfamil Enfacare A+® and Similac Advanced Neosure® are 2 examples of PDPFs.
- These are both available as powdered formulas only and should be mixed according to AHS guidelines for the preparation of powdered infant formula.

  For information on safe preparation and handling of infant formula refer to the *Nutrition Guideline: 3.3 Safe Preparation and Handling of Infant Formula*.

Do preterm infants still need Vitamin D and Iron supplementation?

- Yes. Vitamin D and iron supplementation is necessary.
- Vitamin D supplementation is recommended at 400 IU per day, but may be increased in some clinical scenarios based on individual assessment by clinicians (MD/RD).[12,26]
- Breastmilk does not contain enough vitamin D to meet the preterm infant's needs. When PDPF is used to supplement breastmilk, or when used on its own, it contains some vitamin D but still not enough to meet the needs of the preterm infant.
- Iron supplementation is also recommended for preterm infants and will be initiated prior to hospital discharge by the infants' clinicians (MD/RD). Supplementation ranges from 2-4 mg/kg/day (total intake) and is dependent upon the clinical condition of the infant.[27,28]

What is the recommended frequency of growth monitoring for preterm infants after hospital discharge?

- There are no established guidelines for frequency of growth monitoring in preterm infants. When monitoring the growth of preterm infants, health professionals should follow the same recommendations for healthy term infants outlined in the Childhood Growth Measurement Protocol

How long should corrected age be used to plot on growth charts?

- All preterm infants should have growth measurements (weight, length, head circumference and weight-for-length) plotted using corrected age until at least 24 months and up to 36 months of age.[29]
- Plotting preterm infants using chronologic age versus corrected age may result in inaccurate assessment of growth and unnecessary concerns of growth faltering.

Are there any handouts on infant formula that I can use with my clients?

For infant nutrition resources visit Nutrition Education Materials at http://www.albertahealthservices.ca/nutrition/Page11115.aspx and click on **Infants.**

For more information related to healthy infants and children see Healthy Parents Healthy Children.

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