

**Neonatal
nutritional
information pack**



Contents

◆ Neonatal nutrition cribsheet.....	3
◆ Flow chart for feeds on discharge from neonatal unit.....	6
◆ Stock of formula feeds for neonatal unit.....	8
◆ Going home on Human milk fortifier.....	10
◆ Information on preterm formula at home.....	11
◆ Going home on preterm formula.....	14
◆ Specialist infant formula prescription guide.....	15

Neonatal Enteral Nutrient Requirements

Nutrient	Recommended Intakes (1)		Reference Nutrient Intake (2)
	<1kg (stable growing)	1-1.8kg (stable growing)	Term (0-3 months)
Fluid (ml/kg)	135-200		150
Energy (kcal/kg)	110-135		115-100
Protein (g/kg)	4-4.5	3.5-4	2.1
Sodium (mmol/kg)	3.3-5		1.5
Calcium (mmol)	3-3.5/kg		13.1/day
Phosphorus (mmol)	1.9-2.9/kg		13.1/day
DHA (mg)	12-30/kg		
Vitamin A (IU)	1332-3330/kg		1167/day
Vitamin D (µg)	800-1000/day (400/day (3))		340/day (+200/day (4))
Vitamin E (IU)	2.2-11/kg		3.3/day
Iron (mg)	2-3/kg (from 2 weeks, by 4-6 weeks)		1.68/day (0-3 months)
(1) ESPGHAN, 2010. (2) GOSHC, 2008 HMSO 1991. (3) Tsang et al, 2005. (4) FSAI, 2007.			

Per 100ml	Energy (kcal)	Protein (g)	Fat (g)	Sodium (mmol)	Calcium (mmol)	Phosphorus (mmol)	Iron (ml)
Colostum	56	2	2.6	2	0.7	0.5	0.07
EBM preterm day 6-10	66	1.9	3.4	1.2	0.8	0.5	0.04
EBM preterm day 22-30	69	1.5	3.6	0.9	0.7	0.3	0.04
EBM term day >30	64	1.2	3.4	0.9	0.7	0.5	0.04
EBM mature	69	1.3	4.1	0.7	0.9	0.5	0.07

Product	Age	Amount	Nutritional Content
Dalivit	0-1yrs	0.3ml	A= 2,500iu B1= 0.5mg B2= 0.2mg Nicotinamide= 2.5mg C= 25mg D= 200iu
	1-3yrs	0.6ml	Double above
Abidec Contains arachis oil and sucrose	0-1yrs	0.3ml	A=666.5iu B1= 0.5mg B2= 0.2mg Nicotinamide=2.5mg C=25mg D=200iu
	1 -3yrs	0.6ml	Double above
Healthy start	1m-5yrs	5 drops	A= 700iu C = 20mg D= 300iu
Sytron		0-18yrs	Fe = 27.5mg per 5ml

Please discuss with the neonatal pharmacist for most up to date information.

Vitamin conversions	Atomic weight	Conversion factor
Vitamin A		3IU Vit A = 1RE = 1µg retinol or 6µg β carotene
Vitamin D		1µg = 40IU, 1 IU = 0.025µg/L
Phosphate	31	0.032 mmol/dL
Zinc	65	0.015mmol/dL
Calcium	40	0.025mmol/dL

To convert mg to mmol: either mg substance ÷ atomic weight OR mg substance x conversion factor.

Per 100ml	Energy (kcal)	Protein (g)	Vitamin A(ug)	Vitamin D(µg)	Phosphorous (mg)	Iron (mg)	Zinc (mg)
Nutriprem 1	80	2.7	366	3.1	63	1.6	1.1
Hydrolysed Nutriprem	80	2.6	366	3.1	54	1.6	1.1
Nutriprem 2	72	2	100	1.8	48	1.2	0.9
(Per sachet)							
Breast Milk Fortifier	8	0.6	2.5	100	19	0	0.3
Protein Supplement	3.4	0.82	0	0	5.2	0	0

Nutritional profile of feeds may change for most up to date check manufacturers information/first steps nutrition.

Feeds on discharge for neonatal infants

Maternal breast milk is the preferred milk if available and ongoing support provided to continue to feed breast milk (infant feeding team, community feeding team, breast feeding groups). If parents wish to introduce formula feeds support and advice on mixed feeding and/or transition to formula should be provided

Breast milk fortifier (BMF)/Human milk fortifier: Only available in hospital not available on prescription in the community, if discharged on BMF this must be provided by the hospital. Provide 1 box of fortifier sachets and fortifier use at home plan.

Nutriprem 1: Preterm infant or very low birth weight NP1. Only available in hospital, if discharged on NP1 this must be provided by the hospital. Used for infants weighing $\leq 1.8-2\text{kg}$, Gestational age ≤ 34 weeks at birth. Can be used alongside breast feeds/milk for mixed feeding. Should be used under the supervision of neonatologist. Levels of vitamins and minerals are higher in preterm formulas.

Available in 70ml bottles. Can be given 150-200ml/kg. Amount required 2-3 boxes of 24 bottles per week provided by the unit.

Nutriprem 2: For preterm infants or very low birth weight can be commenced when weight is 1.8-2kg or above. Can be used alongside breast feeds/milk for mixed feeding. For catch up growth may be used until 3-6 months corrected if required. Provide with 2 x boxes from the unit. GP prescription required on discharge home. Levels of vitamins and minerals are higher in preterm formulas. See information for discharge home on preterm formula

First stage/standard formula: If catch up growth has been demonstrated.

High calorie/protein formula. Dietetic input required if using this formula. Can be commenced when infant reaches 2.5kg. Provide with 1 x box from the unit/dietitian. GP prescription required on discharge home.

Infatrini: High calorie/protein formula. For treatment of faltering growth, increase nutritional requirements and restricted fluids. Ready to feed formula. Manufacturer nutricia danone.

Available on prescription only.

Infatrini peptisorb: High calorie/protein formula, 50% MCT. Used for malabsorption. Ready to feed formula. Manufacturer nutricia danone.

Can be used to treat CMA if high calorie/protein formula required.

Available on prescription only.

Pepti-junior

Extensively hydrolysed semi-elemental formula for infants with malabsorption and severe food intolerance. Manufacturer cow & gate. Available in 450g tin. Pepti-junior is a lower osmolality feed (210mOsmol/kg H₂O) compared to other hydrolysed formula. It is cows milk protein and lactose free and can be used to treat CMA.

Provide with 2 tins for home. GP prescription required

Further information on CMA pathway and formula feeds is available

<http://firstport2/staff-support/child-health/general-paediatrics/Documents/Patient%20and%20Parent%20Info%20Leaflets/Allergy/cows%20milk%20allergy%20pathway.pdf>

More information available on neonatal enteral feeding

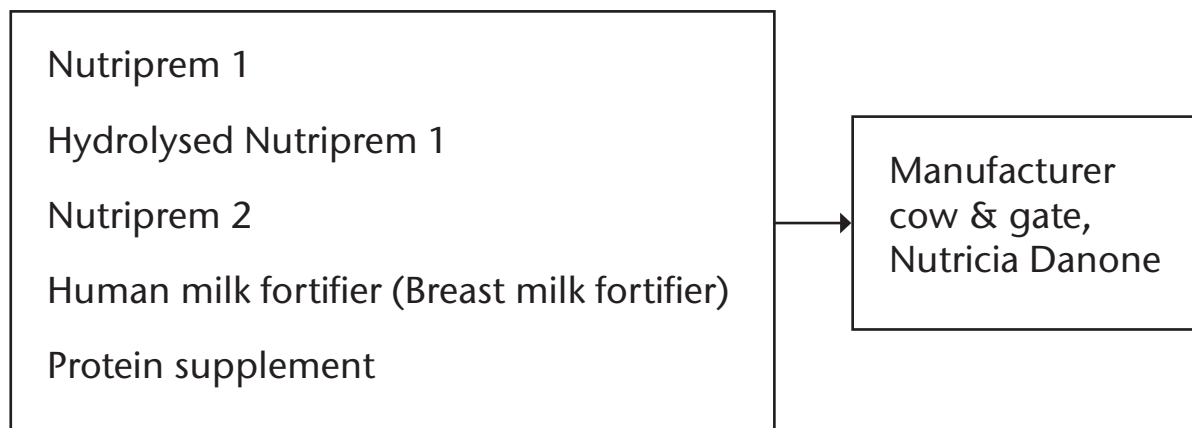
<http://www.knowledge.scot.nhs.uk/media/CLT/ResourceUploads/4083738/8dabac63-9cf9-4bb1-bcf4-6518450906e4.pdf>

More information is available on firstport outlining standard and specialist formulas:

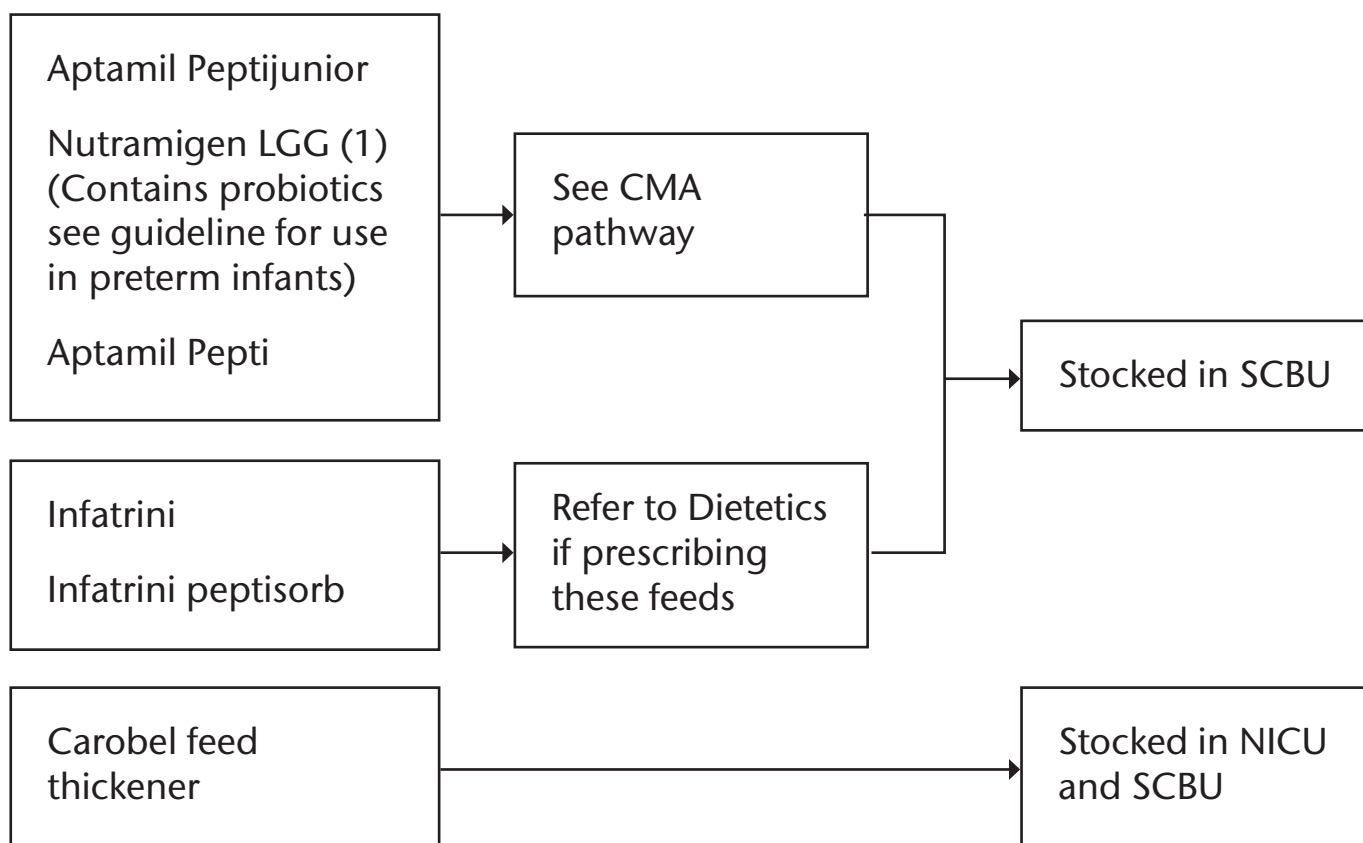
<http://firstport2/staff-support/maternal-infant-nutrition/Documents/Formula%20Feeding/Staff%20Information%20of%20Formula%20Milks%20-%20V10%20Updated%20April%202019.pdf>

Stock of specialist feeds for Neonatal units

Feeds stocked on neonatal units (ordered via stores)



Feeds stocked on neonatal units replenished by the Dietitian



Stock information for specialist feeds

As these are not commonly used feeds please check use by dates.

- ◆ If the feeds stocked by the dietitian are not available please call the dietetic department on 6188.
- If there is no one available in the dietetic department these can be obtained from the feed storeroom on level 0, the keys are available from security.
- Many of the feeds look very similar and care must be taken to take the correct feed.
- Please leave a message on the dietetic department phone to advise stock taken.

Going home on human milk fortifier

Before you go home your baby will have started human milk fortifier mixed with your breast milk (we encourage and support continued breast feeding and/or breast milk feeding).

Human milk fortifier provides some extra calories, protein and vitamins for your baby and may be continued after you're discharged from hospital to help promote catch up growth. Catch up growth is when weight centile line has increased back up to the birth weight centile line, and your baby's head circumference and length are increasing in a similar pattern to weight

Human milk fortifier is only suitable for infants born prematurely and as advised by neonatologist and/or paediatric Dietitian.

You'll be given a supply by the neonatal unit and then any further human milk fortifier that you might need will be provided by the neonatal unit. It is not available on prescription from your GP.

Human milk fortifier can be used until your baby reaches **3-6 months** *corrected age (actual age minus the number of weeks premature)

Your health visitor will monitor how your baby is growing by measuring weight, length and head circumference.

We'll discuss with you about stopping the human milk fortifier as your baby shows catch up growth.

Human milk fortifier

Breastfeeding	Mix 1 sachet of human milk fortifier with 5-10ml of expressed breast milk and offer between feeds. Give 3 times per day.
Feeding via expressed breast milk	Mix 1 sachet into a breast milk bottle feed. Do this three times every day.
	If more fortification is required this will be discussed with you and advice may be given to increase to maximum of 6 sachets per day.

Information for discharge home on Preterm formula for Health Care Professionals

(NEPDF Nutrient enriched post discharge formula:
Nutriprem 2 & SMA gold prem 2)

Criteria for use:

- ◆ Infants who are formula feeding or mixed feeding (breastfeeding/breast milk should be promoted and encouraged)
- ◆ Babies born ≤ 34 weeks gestation
(or considered for those SGA (small gestational age) for > 34 weeks)
- ◆ weighing $\leq 1.8-2$ kg at birth

- ◆ Prior to discharge infants will be commenced on preterm nutrient enriched formula
- ◆ These formula have higher calories, protein and added vitamins when compared to standard first stage formula
- ◆ **Preterm nutrient enriched formula is only suitable for infants born prematurely and as advised by neonatologist and/or paediatric dietitian**

Formula used until **3-6 months** corrected age* (maximum of 6 months corrected age) [*corrected age - this is actual age minus the number of weeks premature]

Formula should be changed to standard first stage formula if catch up growth is demonstrated before this time (weight centile has increased back to that of birth weight centile and OFC, length increasing proportionally to this)

- ◆ Health visitor to carry out growth monitoring (weight, length and head circumference)
- The infant will have review arranged by the neonatal team prior to discharge if this is required
- Any ongoing concerns with the infants growth whilst on preterm infant formula, refer to paediatric Dietitian and back to neonatal team (see faltering growth management guidelines)
<https://www.nice.org.uk/guidance/ng75/chapter/Recommendations#weight-loss-in-the-early-days-of-life>
- The preterm formula should be stopped if excessive weight gain (increased weight centile from birth weight centile and/or disproportionate weight to length/OFC)

Pre-term formula can be prescribed until the infant reaches **3-6 months** *corrected age.

If ongoing growth concerns at this time discuss with paediatric Dietitian

Review if sytron and/or vitamins need to be commenced at this time (see neonatal vitamin guidelines)

<http://firstport2/staff-support/neonatal/Documents/Clinical%20Management%20Guidelines/Vitamin%20and%20Iron%20Supplementation%20in%20Neonates.pdf>

Formula available on prescription:

Nutriprem 2[®] powder
manufacturer cow & gate
presentation 900g tub

SMA Gold Prem 2[®] powder
manufacturer SMA
presentation 400g tin

Liquids should NOT BE ROUTINELY prescribed

unless there is a clinical need requested by Neonatal Team/ Paediatric Dietitian (e.g. immunocompromised infant).

Cost per 100ml is 82p to 89p for the liquid compared to 17p to 20p for the powder formula.

Specialist infant formula prescribing guide for powdered feeds

	Requirement for 30 days			This is a guide for monthly requirements
Age	400g tins	800g tubs	900g tubs	
0-6 months	6 6-11	4 4-6	3 3-5	Infants less than 6 months are exclusively formula fed and drink (on average) 150ml/kg/day of a normal concentration formula.
6-12 months	6-8	3-4	3-4	Infants aged 6-12 months require less formula as they start to eat more solid food
Over 12 months	6	3	3	The Department of Health recommends infants over 12 months have 350-480ml of milk, milk substitute or other dairy products per day to meet calcium requirements

There may be some infants who are on larger volumes for medical reasons and the above is a guide.

Contact details:

Paediatric Dietitians University Hospital Wishaw
Telephone: 01698 366188

Neonatal unit/Special care baby unit (SCBU)
Telephone: Hospital Switchboard 01698 361100 and ask for ward required.

Going home on preterm formula

Before you go home your baby will have started preterm nutrient enriched formula or mixed feeding (we encourage and support continued breast feeding and/or breast milk feeding).

Preterm formula has higher calories, protein and added vitamins than standard first stage formula.

Preterm nutrient enriched formula is only suitable for infants born prematurely and as advised by neonatologist and/or paediatric Dietitian.

You'll be given a supply by the neonatal unit for the first few days at home, then the formula will be prescribed by your GP. As it is a specialist formula it may take 1-2 days for your local pharmacy to get this in stock. Please let your GP practice, health visitor or specialist nurse know if you are having problems with the prescription.

Pre-term formula can be prescribed until your baby reaches **3-6 months** *corrected age (*actual age minus the number of weeks premature)

Your health visitor will monitor how your baby is growing by measuring weight, length and head circumference.

We'll discuss with you when formula can be changed to a standard first stage formula as your baby shows catch up growth. Catch up growth is when weight centile line has increased back up to the birth weight centile line and your baby's head circumference and length are increasing in a similar pattern to weight.

When you're changing to standard formula vitamins and iron (abidec and sytron) may have to be restarted if these were stopped while your baby was on preterm formula.

Specialist infant formula

	Number of tins (for 30 days)			This is a guide for monthly requirements
Age	400g tins	800g tubs	900g tubs	
Under 6 months; on discharge home	6	4	3	Infants less than 6 months are exclusively formula fed and drink (on average) 150ml/kg/day of a normal concentration formula.
0-6 months	6-11	4-6	3-5	
6-12 months	6-8	3-4	3-4	Infants aged 6-12 months require less formula as they start to eat more solid food

Specialist infant formula prescribing guide

	Requirement for 30 days				
Age	400g tins	800g tubs	900g tubs	200ml bottles	
0-6 months	6	4	3	5 cases of 24 bottles providing 120 x 200ml bottles (24000ml)	Infants <6 months are exclusively formula fed and drink (on average) 150ml/kg/day of a normal concentration formula
6-12 months	6-8	3-4	3-4	5-7 cases of 24 bottles providing 120-168 x 200ml bottles (24000 -33600ml)	Infants aged 6-12 months require less formula as solid food intake increases
Over 12 months	6	3	3	5 cases of 24 bottles providing 120 x 200ml bottles (24000ml)	The Department of Health recommends infants >12 months requirements of 350-480ml of milk or milk substitute per day to meet calcium requirements

There may be some infants who are on larger volumes for medical reasons and the above is a guide.



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NHS Lanarkshire General Enquiry Line: 0300 30 30 243

NHS inform - The national health information service for Scotland.
www.nhsinform.org
Tel No: 0800 22 44 88

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