

Vitamin and Mineral, and Enteral Supplementation - NICU

Guideline Responsibilities and Authorisation

Department Responsible for Guideline	Newborn Intensive Care Unit (NICU)
Document Facilitator Name	Jutta van den Boom
Document Facilitator Title	Neonatologist
Document Owner Name	Jutta van den Boom
Document Owner Title	Clinical Director
Target Audience	Medical Officer, Nurse Practitioner or Clinical Nurse Specialist working in NICU
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Guideline Review History

Version	Updated by	Date Updated	Summary of Changes
5	David Bourchier	15 Feb 2017	Addition of Vitamin E
6	Jutta van den Boom	May 2020	Addition of Vitamin A, change Vitadol C to vitamin D, inclusion of enteral supplementation (HMF, probiotics)
6.1	Jutta van den Boom	Oct 2020	Essential update re Ferrous Sulphate 0.4ml per dose (not 0.4ml/kg)
6.2	Jutta van den Boom	Mar 2021	Clarification of phosphate prescription

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1 Overview

1.1 Purpose

To provide guidance on nutrition for premature or low birth weight infants in the Neonatal Intensive Care Unit (NICU) and postnatal wards

For fat soluble vitamin supplementation (Vitamin A, D, E and K) in fat malabsorption conditions, please refer to [Management of Conjugated Hyperbilirubinaemia in NICU procedure \(1486\)](#)

1.2 Scope

Medical Officer, Nurse Practitioner or Clinical Nurse Specialist working in NICU.

1.3 Patient / client group

Infants in NICU and postnatal wards

1.4 Definitions

ESPGHAN	European Society of Paediatric Gastroenterology, Hepatology and Nutrition
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2 Clinical Management

2.1 All infants

All infants should receive Vitamin K (oral or intramuscular) at birth:

[Vitamin K \(phytomenadione\) for neonates \(2980\)](#)

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All infants should receive supplemental Vitamin D (400 IU/day) for the first year of life.

Supplement	Product	Daily Recommended Intake	Indication	Dose	Duration
Vitamin D	Puria (400 IU/drop) One bottle for each baby, to take home on discharge	400-1000 IU/day	all infants from Day 1, not required when SMOF	1 drop (400 IU), daily	Until first birthday (to be prescribed for babies on postnatal ward)

2.2 Pre-term infants (<37 weeks)

Supplement	Product	Daily Recommended Intake	Indication	Dose	Duration
Vitamin A	Retinol oral drops 666.7 microgram per 2 drops (NOTE: section 29)		<37w or <2.5kg, not required when SMOF	1 drop = 0.03ml (333 microgram, 1110 IU), daily	Until discharge (not prescribed on PNW)
Vitamin D	Puria (400 IU per drop) One bottle for each baby, to take home on discharge	400-1000 IU/day	all infants from Day 1, not required when SMOF	1 drop (400 IU), daily	Until first birthday (to be prescribed for babies on postnatal ward)
Calcium	Cacit® 500 mg, Calcium Sandoz Fortissimum 1000 mg, 1mmol/mL solution	1-3mmol/kg/day	Elevated ALP not responding to phosphate supplementation	1 mmol, bd	Until ALP < 400
Ferrous Sulphate (Iron)	Ferrous sulphate oral liquid (150mg/5mL, equivalent to 30 mg/5 mL elemental iron)	2-3 mg/kg/day elemental iron (some breastfed infants or iron deficiency anaemia treatment may require up to 5mg/kg/day)	<37/40, start at 4-6 weeks postnatally for breastfed infants,	0.4ml (2.4 mg)/kg/day, daily	Continue until on solids established

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Supplement	Product	Daily Recommended Intake	Indication	Dose	Duration
			provide deferred prescription at discharge if <32/40 - check ferritin at 4/52, start if <270	Up to 0.8ml (4.8 mg)/kg/day, daily	
Folate	Folic Acid Suspension (50 microgram/mL)	50 microgram/day	<37/40, Breastmilk only (at least 50%)	1ml (50 microgram), daily	Until term / discharge (not prescribed on PNW)
Phosphate*	Phosphate solution (0.5mmol/mL)	1-2mmol/kg/day	If <32/40 check ALP at 3/52 Raised ALP >400u/L Hypophosphataemia	Raised ALP start dose 0.25mmol (0.5ml) bd = total of 0.5mmol/day* Max for raised ALP 0.5mmol (1ml) tds = 1.5mmol/day Hypophosphataemia start dose 0.5mmol/kg bd	Start if ALP > 400 discontinue when ALP < 400 If ALP >400 on discharge will require community monitoring.
Human Milk Fortifier	FM85	Add 1 sachet to 25ml EBM	<32/40 or <1800g	start when feed volume reach 5ml	Until discharge, consider reducing feed volume to 150ml/kg/day if crossing centiles, transition to breastfeed
Probiotics	Infloran 250mg/capsule		<32/40 or <1500g	1 capsule daily	until 36/40 or discharge

*Phosphate dose management:

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For infants born <32/40, ALP trend should be measured weekly from 3 weeks of age and phosphate dose optimised accordingly.

- If the ALP remains >400u/L and is trending up increase the dose in small incremental steps weekly (i.e. 0.25mmol BD to 0.25mmol TDS) until levels plateau, begin to fall or maximum dose is reached.
- If maximum dose of 0.5mmol TDS is reached and ALP level continues to climb ensure liver function has been checked to exclude hepatic cause and consider calcium supplementation in discussion with SMO.
- If levels plateau hold at the current dose.
- If levels begin to fall decrease dose in small incremental steps (i.e. 0.5mmol TDS to 0.25mmol TDS) until at minimum dose then consider stopping if the ALP is <400u/L.

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3 Audit

3.1 Indicators

- Prescription of supplements in accordance of guideline.
- All infants get Vitamin D prescribed at discharge.
- All eligible infants get ferrous sulphate prescribed at discharge

4 Evidence base

4.1 Bibliography

- ESPGHAN Committee on Nutrition (Ref: J Ped Gastro Nutr. Jan 2010; 50(1): 85-91)
- Eur Pediatr. 2015; 174:565-576) an expert position paper

4.2 Associated Waikato DHB Documents

- [Management of Conjugated Hyperbilirubinaemia in NICU](#) procedure (Ref. 1486)
- [Vitamin K \(phytomenadione\) for neonates](#) drug guideline (Ref. 2980)
- [Calcium oral for neonates](#) drug guideline (Ref. 2903)
- [Probiotic \(Infloran\) for neonates](#) drug guideline (2931)
- [Phosphate Oral for neonates](#) drug guideline (6370)

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