

## **ENTERAL NUTRITION - INFANTS GREATER THAN 1800G**

*This Local Operating Procedure is developed to guide safe clinical practice in Newborn Care Centre (NCC) at The Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this Local Operating Procedure.*

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### **1. AIM**

- To provide feeding guidelines for infants with birth weight >1800g

### **2. PATIENT**

- Infants >1800g birth weight in the neonatal intensive care unit at the Royal Hospital for Women

### **3. STAFF**

- Medical and nursing staff

### **4. NUTRITION GOAL**

- To establish breastfeeds safely and timely and to avoid or reduce intravenous nutrition

#### **KEY PRACTICE POINTS:**

- Antenatal counselling should include education of women about the importance of expression of breast milk within 1 hour after birth.
- **If appropriately grown with no history of abnormal umbilical dopplers and no other acute illnesses (e.g. respiratory distress) at birth** – consider either of 2 options: (A) Attempt 2-3rd hourly breastfeeds with pre-feed BGL every 6 hours or (B) Commence 3rd hourly gavage enteral feeds at 30 mL/kg/day with either expressed breastmilk (EBM) or formula and if tolerated – increase enteral feeds to 60 mL/kg/day after 6 hours of life (NOTE: Parental consent must be obtained prior to formula administration)
- Monitor pre-feed blood glucose level every 6 hours in the first 24 hours of life.
- If feeds are tolerated – increase enteral feeds to 60 mL/kg/day after 6 hours of life. If feeds are not tolerated, consider intravenous fluid therapy in addition to enteral feeds.
- If small for gestational age or history of abnormal umbilical dopplers – Discuss with neonatologist about appropriate feeding regime. Options may include partial enteral feeding at 20-30 mL/kg/day (e.g. 5 mL 3<sup>rd</sup> hourly) and partial intravenous therapy for the first 24 hours with gradual increase in enteral feeds as tolerated.
- Check gastric pH every feed for tube position. DO NOT routinely aspirate the full gastric contents.
- Assess the feed tolerance by monitoring for any abdominal distension and vomiting.

### **5. CLINICAL PRACTICE**

#### **Prior to birth**

- NICU medical team or CMC for Lactation Newborn Care to provide counselling for the woman and her partner about the importance of expression of mother's own milk (MOM), breastfeeding and feeding goals. But DO NOT encourage expression prior to delivery, which may facilitate preterm labour.

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### At birth

- Determine if the infant is appropriately grown for gestational age (AGA) or growth restricted (Small for Gestational Age (SGA), birthweight < 10th percentile):

### First 24 hours of life

- If appropriately grown, no history of abnormal dopplers and no acute illnesses (e.g. respiratory distress)** – Consider either of 2 options: (A) Attempt 2-3rd hourly breastfeeds with pre-feed BGL every 6 hours or (B) commence 3rd hourly gavage enteral feeds at 30 mL/kg/day with either expressed breastmilk (EBM) or formula and if tolerated – increase enteral feeds to 60 mL/kg/day if tolerated after 6 hours of life (NOTE: Parental consent must be obtained prior to formula administration as per policy).
- If SGA or abnormal dopplers** – Discuss with neonatologist/Fellow about enteral feeds. Options may include (a) trialling the feeding regime of AGA infants, (b) commence partial enteral feeds at 5 mL 3<sup>rd</sup> hourly and the remaining daily fluid as intravenous therapy and increase enteral feeds as tolerated. Consider probiotic if abnormal umbilical dopplers or SGA.

### After 24 hours of life

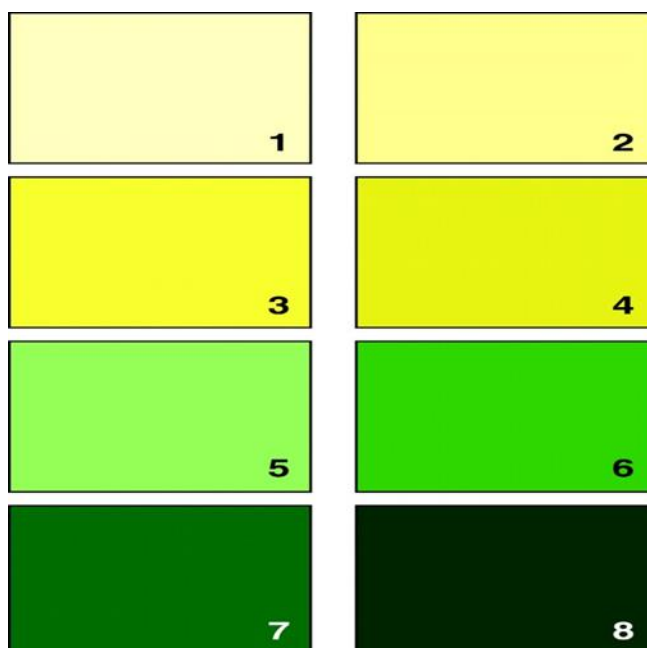
- Increase feeds by 20-30 mL/kg/day until 170 mL/kg/day is reached.
- SGA infants: May need to advance the feeds slower.

### Fortification

- Fortification may be considered particularly in infants <34 weeks GA at birth or on case by case basis.

### Monitoring for feed intolerance

- Regular clinical assessment is of paramount importance and any change in abdominal findings (distension, discolouration of abdominal skin, blood in stool) need immediate review including cessation of feeding and investigations to rule out abdominal pathology.
- Check gastric aspirates prior to feed to assess the colour and pH but not aspirate the whole gastric fluid:



- If aspirate/vomit is heavily bile stained (Avocado or spinach colour, figure 7 or 8 in the picture above) – return aspirate, stop feeds and notify medical team for assessment.

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- Occasionally, the medical team may decide to measure the aspirate volume as a marker of feed intolerance:
  - If aspirate volume <50% of previous 6 hour volume and not heavily bile stained and clinically stable abdomen – return aspirate and continue to feed.
  - If aspirate volume ≥50% of previous 6 hour volume or heavily bile stained– return aspirate, stop feed and assess the infant for any abdominal pathologies.

### **Nutrition intake entry**

- Nurse to enter daily nutrient intakes (including IV fluids, enteral feeds, pentavite, Iron and any other nutrients) in NICUS Nutrition section.

### **Anthropometric measurements**

- Measure weight Mon/Wed/Friday.
- Measure length and head circumference every Wednesday.
- Plot all the measurements on NICUS growth charts.
- Reasonable growth targets after initial weight loss and regain in birthweight can be drawn as follows:<sup>1-3</sup>
  - Weight – 15 to 20 g/kg per day
  - Length – 1 cm/week
  - Head circumference – 0.7 cm/week

### **Precautions**

- Haemodynamically significant PDA.
- Infants on inotropic support and/or muscle relaxants.
- Infants on indomethacin or ibuprofen.
- Small for gestational age (SGA) infants.
- Necrotising enterocolitis and other medical or surgical gastrointestinal conditions.

### **Special considerations**

- Feeding regime may be altered (eg. hourly feeds, continuous feeds, transpyloric feeds or nasojejunal feeds) in special situations such as birthweight <750g, growth restriction, abnormal umbilical dopplers, feed intolerance, post necrotising enterocolitis.

## **6. DOCUMENTATION**

- eMR
- Neonatal Observation Chart
- NICUS database

## **7. EDUCATIONAL NOTES**

- These guidelines are part of an integrated system for providing optimal newborn care, together with kangaroo mother care (skin-to-skin contact), rooming-in, respecting the WHO/UNICEF Ten Steps to Successful Breast-feeding expanded in 2011 for use in NICUs, and other best practices for neonatal care.<sup>4</sup>
- This feeding strategy aims to promote and support breastfeeding in the NICU.
- Early intervention with milk expression soon after delivery (ideally within 6 hours) is critical for milk production of NICU mothers; therefore, mothers should be taught a method of milk expression within this time frame.
- This feeding strategy should be done in conjunction with Immuno-Supportive Oral Care (ISOC).<sup>5</sup>
- There are no large comparative trials to guide the feeding regime in infants greater than 1800 g.
- Definition of Functional Outcome: The level of ability to perform age-appropriate activities of daily living and socially allocated roles.<sup>6</sup>

## ENTERAL NUTRITION - INFANTS GREATER THAN 1800G cont'd

### Preterm Breast milk composition per 100 mL<sup>7</sup>

	1 <sup>st</sup> week	2 <sup>nd</sup> week	Week 3/4	Week 10/12
Energy (kcal)	60 (45-75)	71 (49-94)	77 (61-92)	66 (39-94)
Protein (g)	2.2 (0.3-4.1)	1.5 (0.8-2.3)	1.4 (0.6-2.2)	1.0 (0.6-1.4)
Fat (g)	2.6 (0.5-4.7)	3.5 (1.2-5.7)	3.5 (1.6-5.5)	3.7 (0.8-6.5)
Calcium (mg)	26 (9-43)	25 (11-39)	25 (13-36)	29 (19-38)
Phosphorus (mg)	11 (1-22)	15 (8-21)	14 (8-20)	12 (8-15)

### Term Breast milk composition per 100 mL<sup>7</sup>

	1 <sup>st</sup> week	2 <sup>nd</sup> week	Week 3/4	Week 10/12
Energy (kcal)	60 (44-77)	67 (47-86)	66 (48-85)	68 (50-86)
Protein (g)	1.8 (0.4-3.2)	1.3 (0.8-1.8)	1.2 (0.8-1.6)	0.9 (0.6-1.2)
Fat (g)	2.2 (0.7-3.7)	3.0 (1.2-4.8)	3.3 (1.6-5.1)	3.4 (1.6-5.2)
Calcium (mg)	26 (16-36)	28 (14-42)	27 (18-36)	26 (14-38)
Phosphorus (mg)	12 (6-18)	17 (8-27)	16 (10-22)	16 (9-22)

## 8. RELATED POLICIES/PROCEDURES/CLINICAL PRACTICE LOP

- Pasteurised Donor Human Milk (PDHM) for vulnerable infants - Refer to DOH PD2018\_043
- Fortifiers & Formula Preparations
- Breastfeeding - First Expression - refer LOPs Refer to LOPs Lactation/Infant Feeding topic
- Enteral Feed Warming – Calesca
- Immuno-Supportive Oral Care (ISOC)

## 9. RISK RATING

- Low

## 10. NATIONAL STANDARD

- Clinical Governance
- Partnering with Consumers
- Comprehensive Care

## 11. ABBREVIATIONS AND DEFINITIONS OF TERMS

NCC	Newborn Care Centre	PDA	Patent Ductus Arteriosus
CMC	Clinical Midwifery Consultant	NICU	Neonatal Intensive Care Unit
PDHM	Pasteurised Donor Human Milk	ISOC	Immuno-Supportive Oral Care
MOM	Mother's Own Milk	HM	Human Milk
AGA	Appropriate for Gestational Age	NEC	Necrotising Enterocolitis
SGA	Small for Gestational Age	BUN	Blood Urea Nitrogen
GA	Gestational Age	HMF	Human Milk Fortifier
PN	Parenteral Nutrition		

## 12. REFERENCES

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LOCAL OPERATING PROCEDURE  
**NEONATAL SERVICES DIVISION**

Approved by Quality & Patient Safety Committee  
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**ENTERAL NUTRITION - INFANTS GREATER THAN 1800G cont'd**

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6. Saigal S, Tyson J. Measurement of quality of life of survivors of neonatal intensive care: critique and implications. Seminars in perinatology 2008;32:59-66.
7. Gidrewicz DA, Fenton TR. A systematic review and meta-analysis of the nutrient content of preterm and term breast milk. BMC pediatrics 2014;14:216.

**13. AUTHOR**

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**REVISION & APPROVAL HISTORY**

April 2019 Major Revision Approved NCC LOPs Committee

Previous LOP – Enteral Nutrition in Neonates

August 2018 Reviewed and Approved NCC LOPs Committee

November 2010 Primary Approved Newborn Care Management Committee and RHW Quality & Patient Safety

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