

## **ENTERAL NUTRITION - PRETERM INFANTS 1501-1800G**

*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 preterm infants with birth weight 1501-1800g

### **2. PATIENT**

- Preterm neonates 1501-1800g birth weight

### **3. STAFF**

- Medical and nursing staff

### **4. NUTRITION GOAL**

- Primary goal: To obtain functional outcomes<sup>1</sup> similar to that of term infants.<sup>2</sup>
- Interim goal: To achieve physical growth targets so as not to lose more than 1 standard deviation in weight and head circumference to discharge.<sup>3</sup>

#### **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** – commence 3<sup>rd</sup> hourly gavage enteral feeds at 30 mL/kg/day with either expressed breastmilk (EBM) or pasteurised donor human milk (PDHM) or formula (NOTE: Parental consent must be obtained prior to PDHM or 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, feeding goals and the availability of pasteurised donor human milk (PDHM). But DO NOT encourage expression prior to delivery, which may facilitate preterm labour.

**ENTERAL NUTRITION - PRETERM INFANTS 1501-1800G cont'd****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) – (a) Commence 3rd hourly gavage feeding at  $\approx 30$  mL/kg/day, (b) Monitor pre-feed blood glucose level 6 hourly for the first 24 hours of life, (c) if initial 2 feeds are tolerated, increase the feeds to 60 mL/kg/day from 6 hours of age.
- If SGA or abnormal Dopplers – Discuss with neonatologist/Fellow about enteral feeds. Option may include (a) trialling the feeding regime of AGA infants, (b) commence partial enteral feeds at 5 mL 3rd 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.

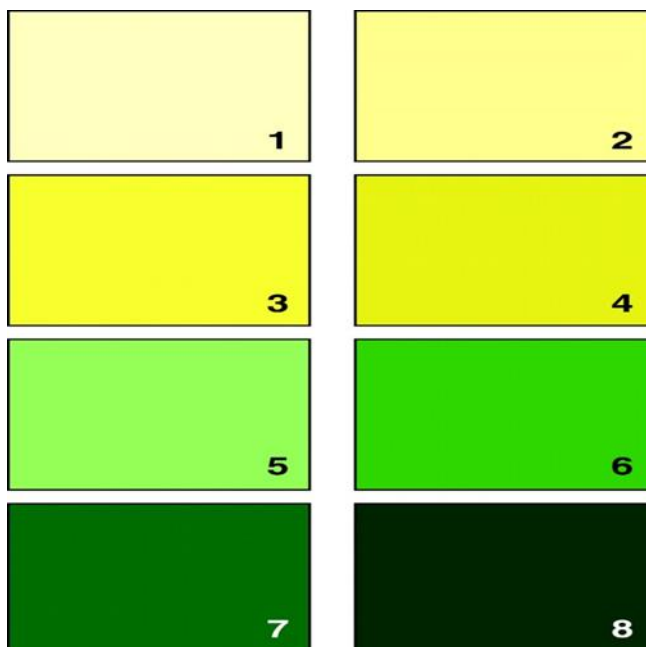
**Fortification**

- Commence 22-23 kcal/30 mL (half fortification) at 120 mL/kg/day and full fortification at 150 mL/kg/day.\*
- Continue fortification generally until the time of discharge and or until transitioning to breast feeds.

\*SGA infants: Fortification may be commenced at 150-170 mL/kg/day.

**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:



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- 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.
- 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>4-6</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
- Medication chart

## **7. EDUCATIONAL NOTES**

- These guidelines are a compilation of an integrated system for providing optimal newborn care, family integrated care, kangaroo 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>7</sup>
- This feeding strategy aims to promote and support breastfeeding in the NICU.
- Early intervention with milk expression soon after delivery (ideally within 1 hour of birth) 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>8</sup>

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- European Society of Pediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) 2015 recommendations<sup>3</sup>:
  - Goals of nutrition: The achievement of adequate growth in preterm infants is extremely relevant in terms of long-term development. Reduction of the incidence and severity of extrauterine growth restriction represents one of the main goals in premature infant nutrition and efforts must begin immediately after birth. The aim of postnatal growth is not to lose more than 1 SDS in weight and head circumference from birth to discharge. Growth is not only weight gain. It includes also head circumference and length gains. (ESPGHAN 2015)
  - Human milk (HM) is the best. Feeding of HM protects against NEC in dose-dependent fashion.
  - HM strongly protects premature babies against late-onset sepsis in dose-dependent fashion.
  - HM has trophic effects on the gastrointestinal tract. The trophic effects of HM are attributable to multiple components that are known to stimulate maturation of the immature gut. Clinically trophic effects are manifested as lower gastric residual volumes, more rapid advancement of feedings and earlier achievement of full feedings.
  - Fortification: All preterm infants with a birth weight <1800 grams should be fed fortified HM. HM should be fortified with protein, vitamins and minerals. HM fortification should start with standard fortification. If infants do not grow appropriately, individualized fortification is advisable.
  - There are two types of individualized fortification: targeted fortification (based on milk analysis) and adjustable fortification (based on blood urea nitrogen (BUN) measurements). Both are advisable depending on the NICU experience and facilities. In our NICU, we implemented adjustable fortification.
  - Pasteurised Donor Human Milk (PDHM): Mother's Own Milk (MOM) is the first choice in preterm infant feeding, and strong efforts should be made to promote lactation. When mother's milk is not available, PDHM obtained from a well-established human milk bank is the preferred choice.
  - Fresh MOM is the first choice for feeding preterm infants.
- Definition of Functional Outcome: The level of ability to perform age-appropriate activities of daily living and socially allocated roles.<sup>1</sup>

### 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

## ENTERAL NUTRITION - PRETERM INFANTS 1501-1800G cont'd

### 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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### 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

**FOR REVIEW: 2023**