

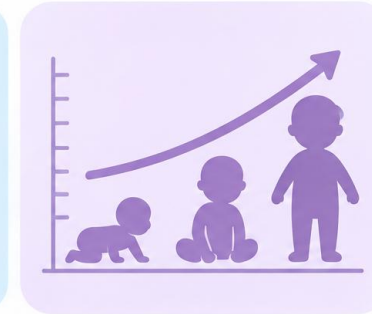
Managing the ex-preterm infant in paediatrics

Rachel Pountney – Principal
Neonatal and Paediatric
Dietitian



Content

- Background
- Preterm physiology
- Nutritional requirements
- Use of preterm post discharge formula
- Vitamins and minerals
- Preterm weaning



Background

13.4 million babies born preterm worldwide

1 in 10 babies born before 37/40 completed gestation

In England 8.1% births were preterm in 2023

Preterm birth has many possible causes but in most cases the reason is unknown.

Survival



Co-Morbidities of prematurity



Medical

Respiratory

- BPD
- Oxygen
- Pulmonary HTN

GI

- NEC
- Surgery
- Malabsorption
- Reflux

Other

- Vision
- Metabolic risk



Growth and Nutrition

- Poor growth
- Altered body composition
- Micronutrient deficiency
- Oral aversion
- Dysphagia
- Tube feeding
- Texture delay



Neurodevelopment

- Cognition
- Motor
- Behaviour
- Learning

The Preterm Infant



Body composition & energy reserves

- less fat-free mass and lean tissue accretion
- lower glycogen and fat stores
- steroid exposure may affect growth and body composition
- catch-up growth may be disproportionate



Protein deficits

- early illness and interrupted nutrition may create deficits
- protein needs are higher than in term infants
- deficits can affect growth and lean mass
- adequate protein supports catch-up growth



Brain development

- rapid brain growth normally occurs in late gestation
- interrupted in preterm birth
- increased risk of altered neurodevelopment
- nutrition is critical for brain growth



GI function & surgical impact

- GORD and dysmotility may impair feed tolerance
- delayed gastric emptying and reflux can affect intake
- NEC and GI surgery may alter absorption
- bowel resection can lead to malabsorption and longer-term nutrition support



Bone mineralisation

- most calcium and phosphate accretion occurs in the third trimester
- lower mineral stores at birth
- risk of metabolic bone disease
- ongoing monitoring may be needed



Iron stores

- iron stores are accumulated mainly late in pregnancy
- reduced stores at birth
- rapid postnatal growth increases needs
- risk of iron deficiency

Transition to Paediatrics



Medical

- Gestation at birth and birth weight
- Key neonatal complications (e.g. BPD, NEC, sepsis)
- Surgery (e.g. bowel resection)
- Current clinical issues affecting nutrition
- Periods of nutritional deficit



Growth

- History of weight, length and OFC
- Growth centiles and trends
- Has catch-up growth occurred?
- Is growth proportionate?
- Current corrected gestational age



Nutrition

- Type of milk/formula (including fortifier)
- Tube and/or oral feeds
- Specialist nutritional products
- Vitamin and mineral supplements
- Feeding history and any delay in oral feeding
- Current feeding skills / SALT involvement

When do they become 'term'?



No fixed age cut-off

- No single evidence-based age when a preterm infant suddenly has the same requirements as a term infant.
- ESPGHAN states requirements may remain higher after discharge, especially in high-risk infants.
- Requirements gradually reduce as an infant approaches term CGA and becomes medically stable.



Use growth and clinical status

- Review weight, length and head circumference.
- Focus on proportional growth, not weight alone.
- Consider ongoing morbidity: BPD, feeding difficulty, GI surgery/malabsorption, growth faltering.



Micronutrient requirements

- Energy and protein enrichment can be discontinued once growth is appropriate.
- Care with excess protein intakes long term as these increase the risk of obesity.
- Iron often continues until 6–12 months CGA.
- Vitamin D, calcium and phosphate.

Preterm Feeds



EBM

- Post-discharge can be adequate to meet nutritional needs if taken in adequate volumes
- Additional support is often needed to establish breastfeeding
- Poor growth in breastfed preterm infants is often due to inadequate feeding
- May benefit from breast milk fortifier to support breastfeeding post-discharge
- May need NGT top-up feeds



Post-discharge formula

- Higher protein and nutrient density than standard term formula
- Used when catch-up growth is needed and breast milk is unavailable or insufficient
- Consider corrected gestational age; a higher-energy formula may be more appropriate
- ESPGHAN: continue until catch-up growth is achieved; some infants may need support to around 12 weeks post-term
- In practice, many can step down within the first few weeks post-discharge if growing well



Term formula / when to step down

- Review weight, length and OFC, not weight alone
- Stop fortifier or post-discharge formula when catch-up growth is achieved and the infant is medically stable
- Avoid prolonged use if weight is rising rapidly or disproportionately
- Excess protein/energy for too long may contribute to rapid weight gain and later obesity risk

Preterm Weaning



Signs of readiness

- Can sit up by themselves, needing only a little support.
- Can hold their head up easily and keep it upright while sitting.
- Explores objects with fingers, hands and mouth.
- Reaches and grasps for food and/or opens mouth when food is offered.
- Beginning to bite and chew toys.



When to start?

- Most preterm infants are ready around 5–7 months corrected age.
- Start complementary feeding when developmental signs of readiness are present.
- Timing may be earlier or later depending on medical complexity, oral feeding difficulties, growth faltering, or neurodevelopment.
- Continue usual milk feeds while solids are introduced.



Evidence and rationale

- Appropriate timing may support oral motor skill development and more positive feeding experiences.
- Unnecessary delay may miss opportunities for skill development and food acceptance.

Summary

Understand the neonatal background

Gestation, complications, surgery, feeding history and periods of nutritional deficit will influence ongoing needs.

Assess the growth trajectory, not a single measurement

Review weight, length and OFC together, using corrected age and considering proportional growth.

Review the need for additional nutritional support regularly

Fortifier or post-discharge formula may still be needed after discharge, but there is no fixed stopping age.

Remember ongoing micronutrient requirements

Iron, vitamin D and sometimes calcium/phosphate may continue after energy and protein needs have normalised.

Consider feeding development alongside growth

Oral experience, feeding skills, aversion and readiness for complementary feeding are all important.

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