



Topic Expert Group: Nutrition

Monitoring growth in the neonatal unit

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Target group

Preterm and ill infants, and parents

User group

Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard

Growth monitoring and assessment of nutritional status is performed using suitable equipment and appropriate growth charts in order to optimise nutritional support and outcomes.

Rationale

Preterm infants grow more slowly than age matched in-utero fetuses. (1) Slow growth is frequently due to poor macronutrient intakes (2), compounded by clinical complications, common neonatal morbidities, and poorly prioritised nutritional care. Patterns of early growth and nutrient intakes are strongly associated with long term metabolic and cognitive outcomes. Growth acceleration in the first three months in infants born at term may increase the risk of metabolic complications in later life. (3) There is no conclusive evidence that catch-up growth in preterm infants increases this risk, and in general the risks of poor growth are far more common and serious. (4) Clinical practice must be considered alongside the strong evidence of worse neuro-developmental or cognitive outcomes in infants who gain weight more slowly (5,6), or who receive lower nutrient intakes. (7–9)

Nutritional screening tools are widely used in other patient groups, but have not been widely used in preterm infants, although tools exist and deserve further evaluation. (10) All infants on NICUs should have regular measurement of weight and head circumference. All measures must be plotted on growth charts appropriate to the population. Measurement of linear (length) growth is more complex, and shows high inter-observer variability. (11) Whilst more detailed growth measures can be used, e.g. tibial length, mid-arm/mid-thigh circumference, their usefulness in routine practice has not been established. (11) Body composition appears to be important but cannot be easily measured routinely in clinical practice. In the longer term weight gain should be interpreted in the context of linear growth to ensure that growth is proportional i.e. attempt to avoid excess fat deposition.

Benefits

Short-term benefits

- Optimised nutritional status (12)

Long-term benefits

- Reduced risk of under- and over-nutrition (consensus)
- Optimised long-term metabolic and cognitive outcomes (7)



Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed and educated about normal patterns of growth in infants by healthcare professionals.	B (High quality)	Patient information sheet ¹
For healthcare professionals		
2. A unit guideline on infant nutrition, including growth measurements and assessment of feeding practices is adhered to by all healthcare professionals.	B (High quality)	Guideline
3. Training and education on how to weigh and measure, which growth charts to use and how measurements can be plotted and interpreted is attended by all responsible healthcare professionals.	B (High quality)	Training documentation
For neonatal unit		
4. A unit guideline on infant nutrition, including growth measurements and assessment of feeding practices is available and regularly updated.	B (High quality)	Guideline
For hospital		
5. Training on how to weigh and measure, which growth charts to use and how measurements can be plotted and interpreted is ensured.	B (High quality)	Training documentation
6. Appropriate calibrated equipment to measure infants (electronic scales, length boards, incubator length measures etc.) is available.	B (High quality)	Audit report

¹ The TEG Nutrition very much supports the need of good communication with families and regular sharing of key information, but it is not in favour of sharing information on each standard by a „parent information sheet“, which is term chosen by the Chair Committee. In our view, sharing multiple parent information sheets bears the risk of overloading families with a plethora of written information during a stressful time period, which may not be very helpful. We suggest to consider other means of sharing information.



For health service

7. A national guideline on growth measurements and assessment of feeding practices is available and regularly updated.	B (High quality)	Guideline
8. Appropriate growth references are agreed on and used.	A (Low quality)	Audit report, guideline

Where to go – further development of care

Further development	Grading of evidence
For parents and family N/A	
For healthcare professionals N/A	
For neonatal unit N/A	
For hospital N/A	
For health service N/A	

Getting started

Initial steps
For parents and family <ul style="list-style-type: none">• Parents are verbally informed about normal patterns of growth in infants.• Parents are encouraged to seek medical advice from healthcare professionals in case of abnormal growth pattern or feeding problems.
For healthcare professionals <ul style="list-style-type: none">• Attend training on appropriate growth measurements and how to monitor them.
For neonatal unit <ul style="list-style-type: none">• Develop and implement a unit guideline on infant nutrition, including monitoring growth and feeding.• Develop information material about normal patterns of growth in infants for parents.
For hospital <ul style="list-style-type: none">• Support healthcare professionals to participate in training on how to weigh and measure, which growth charts to use and how measurements can be plotted and interpreted.
For health service <ul style="list-style-type: none">• Develop and implement a national guideline on growth measurements and assessment of feeding practices.• Establish the use of appropriate growth references.



Source

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2. Embleton NE, Pang N, Cooke RJ. Postnatal malnutrition and growth retardation: an inevitable consequence of current recommendations in preterm infants? *Pediatrics*. 2001 Feb;107(2):270–3.
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4. Ong KK, Kennedy K, Castañeda-Gutiérrez E, Forsyth S, Godfrey KM, Koletzko B, et al. Postnatal growth in preterm infants and later health outcomes: a systematic review. *Acta Paediatr Oslo Nor* 1992. 2015 Oct;104(10):974–86.
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6. Rozé J-C, Darmaun D, Boquien C-Y, Flamant C, Picaud J-C, Savagner C, et al. The apparent breastfeeding paradox in very preterm infants: relationship between breast feeding, early weight gain and neurodevelopment based on results from two cohorts, EPIPAGE and LIFT. *BMJ Open*. 2012;2(2):e000834.
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11. Embleton ND, Hyde MJ, Wood C. Assessment of short- and medium-term outcomes in preterm infants. In: Griffin IJ, editor. *Perinatal Growth and Nutrition*. CRC Press; 2014. p. 19–40.
12. Koletzko B, Poindexter B, Uauy R, editors. *Nutritional care of preterm infants: scientific basis and practical guidelines*. Basel: Karger; 2014. 314 p. (World review of nutrition and dietetics).

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Lifecycle

5 years/next revision: 2023

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