GROWTH MONITORING

DEFINITION

- Routine accurate measurement and documentation of weight, length and occipitofrontal circumference (OFC)

AIM

- To detect any abnormal growth patterns, including faltering growth

INTRODUCTION

- Neonatal nutrition and resulting postnatal growth are major determinants in the short- and long-term outcomes of preterm neonates
- Optimal postnatal nutrition and growth associated with more positive later health and developmental outcomes
- Preterm babies who demonstrate low weight gain in the early years have a higher probability of poorer cognitive developmental outcomes, while those with excessive weight gain have an increased risk of childhood and adult obesity, cardiovascular disease and diabetes
- Plot measurements of weight, length and OFC on appropriate and sex specific growth chart to allow assessment of adequate velocity and proportionate growth
- measurements to be undertaken by qualified member of staff trained in the use of the equipment in presence of parents as per FICare plan
- Involve parents/carers with all growth monitoring procedures

WEIGHT

Frequency

- Weigh all babies on admission to NNU
- For ITU babies which are unstable especially in first few days of diuresis, consider need to weigh daily
- For HDU babies, weigh 3 times/week (Monday, Wednesday, Friday)
- For SCBU babies, weight twice weekly (Monday, Thursday)
- Plan weighing schedules taking into account developmental care needs
- If baby too unstable to be weighed for >5 consecutive days, and incubator does not have inbuilt scales:
  - calculate weight-for-age from appropriate growth chart
  - use as working weight (assuming baby is following their previous centile line) to ensure adequate fluids, enteral and parenteral nutrition, and drugs administered
  - reinstate routine weighing once baby stable
- If baby unstable, assess for fluid overload – impacts on accuracy of weighing for growth monitoring

Equipment

- Class III electronic baby scales or incubator with inbuilt scales (if available) – accurate to 5 g
- All scales to be:
  - tested and recalibrated annually
  - cleaned between patients in accordance with local infection control policy

Method

- Wash and sanitise hands and equipment as per local infection prevention policy
- Weigh baby in nappy only (no clothing)
- Use swaddled weighing for optimal developmental care
  - wrap baby in a warm, pre-weighed blanket deduct weight of swaddle blanket
  - no need to deduct weights of medical equipment (e.g. NGT, CVL, cannula etc.)
- Record actual calculated weight on unit documentation/**Badgernet**
  - ≤999 g: to nearest 5 g

- ≥1 kg: to nearest 10 g
- Plot weight at least weekly on **Badgernet** or sex appropriate WHO **Neonatal and infant close monitoring growth chart** [see chart or refer to RCPCH website (www.growthcharts.rcpch.ac.uk) for instructions on use]
- In babies <2 kg: calculate velocity of weight gain in g/kg/d at least weekly
- aim 15–20 g/kg/day as steady weight gain for babies 23–36 weeks' GA at birth
- If parent is present baby will benefit from skin-to-skin contact before returning to incubator/cot

LENGTH

Frequency

- Measure all babies on admission to NNU and weekly thereafter coinciding with a weigh day whilst inpatient

Equipment

- ≤33 weeks or <45 cm: use Leicester Incubator Measure
- ≥33^{+1} weeks: use length mat
- Requires 2 people to obtain an accurate measurement (1 may be parent/carer alongside trained member of staff)

Never use a tape measure to measure length

Method

- Wash and sanitise hands and equipment as per local infection prevention policy
- Measure baby supine, lying flat, ensuring no clothing or nests restrict extension
- Remove hat or ventilation/non-invasive ventilation hat ties
- Preterm babies do not need to be naked
- Term babies to be measured naked, no nappy
- **Operator 1**: place fixed headpiece against crown of baby's head, stabilising head by gently cupping palms of hands over baby's ears
- **Operator 2**: gently place palm of hand over baby's knee encouraging extension, sliding base plate up to meet the soles of the feet
- If baby settled and relaxed, take 3 measurements to ensure consistency
- Record length in cm to nearest 0.1 cm
- Plot length weekly on **Badgernet** or sex appropriate WHO **Neonatal and infant close monitoring growth chart** [see chart or refer to RCPCH website (www.growthcharts.rcpch.ac.uk) for instructions on use]
- Calculate velocity of linear growth in cm/week monthly
- aim 1.4 cm/week as steady linear growth in preterm baby

OFC

Frequency

- Measure on admission to NNU and weekly thereafter coinciding with a weigh day while inpatient

Equipment

- Disposable paper tape measure

Method

- Wash and sanitise hands as per local infection prevention policy
- Remove or fold down hat or head gear that may obstruct measurement
- Using disposable paper tape measure, take measurement at the widest part of baby's head
- above ears, midway between eyebrows and hairline at the front, and to the occipital prominence at the back of the head
- Record in cm to nearest 0.1 cm on NNU documentation

- Plot OFC weekly on **Badgernet** or sex appropriate WHO **Neonatal and infant close monitoring growth chart** [see chart or refer to RCPCH website (www.growthcharts.rcpch.ac.uk) for instructions on use]
- Calculate velocity of OFC growth in cm/week monthly
- aim 0.9 cm/week as steady OFC growth in preterm baby

INTERPRETATION

- Growth charts are a tool to monitor growth and growth velocity
- All babies lose weight after birth and may cross down 2–3 marked centiles with an expectation they will return to their birth centile
- Stable preterm babies with adequate nutritional intake are expected to grow along/parallel to centiles from aged 2–3 weeks
- Babies with slow growth velocity (less than expected over 1 week period), growth failure or whose growth parameters continue to fall across centiles into week 3 of life, to have a full nutritional review
- include calculation of any parenteral nutrition received (not only prescribed), and enteral nutrition intake
- If combined nutritional intake falls short of recommended requirements: optimise nutritional intake (see **Nutrition and enteral feeding** guideline)
- if growth remains suboptimal: see **Nutrition and enteral feeding** guideline – **Inadequate growth**
- If baby exhibiting suboptimal growth: refer to NNU nutrition team or neonatal/paediatric dietitian

DISCHARGE

- Transfer key information regarding growth to Personal Child Health Record (PCHR) or Red Book
- Must include birth and discharge weight, length and OFC