Proposed NNAP Growth Measure: NNAP response to consultation feedback

NNAP was grateful for the large number of responses it received to the consultation concerning a new NNAP measure for postnatal growth. Of the consultation responses relating to the growth measure, 76% (32 of 42 responses) were in favour of NNAP proceeding with the original proposal, or one with modifications. 52% (22 of 42) favoured proceeding with an unmodified proposal.

The NNAP has chosen to respond to all the themes represented in the responses minimising the need for any repetition, rather than to publish the verbatim feedback with responses to each. The following NNAP response addresses each of the themes raised by respondents.

Consultation feedback theme	**NNAP response**
Questions over a lack of an agreed definition of extra-uterine growth restriction (EUGR).	NNAP agree that there is no nationally or internationally agreed definition of EUGR. This causes difficulty in the sectors of research and quality improvement which aim to address the growth of preterm infants. Nevertheless, there is evidence that early growth is associated with important outcomes, and for this reason NNAP sought a pragmatic operational definition. Along with its consultees, NNAP selected a restrictive and conservative definition of EUGR, with the endpoint only being met if there is a fall of 2 z-scores (crossing three channel-spaces on a standard growth chart. There was consensus that growth which was *this* slow was unequivocally abnormal, including respondents to this consultation.
Questions over the definition of EUGR being insufficiently defined. Opposition to current growth charts as not representative of healthy growth.	As stated by several respondents, currently available growth charts are based on birthweights in cohorts of infants. They are not designed to illustrate healthy growth patterns for ex utero growth. However, in the absence of widely-adopted improved charts, they are the most familiar tools to paediatricians. **Furthermore, research on associations between growth and important outcomes has usually relied on changes in standard deviation score (SDS) described by reference to these charts.** Whilst different growth charts may have significant differences in those infants who are defined as SGA at birth, the *change* in SDS over time is likely to be less variable. In any case, the setting of the definition at a fall of at least 2 z-scores will represent a significant growth deficit regardless of the chart used. It is proposed to use the RCPCH Newborn and Infant Close Monitoring charts (based on reanalysed UK1990 data). Messaging to contributor units will be strengthened to clarify that the definition of EUGR is met if *either* weight *or* head circumference falls by 2 z-scores or more.
Concerns about the additional burden of outlier identification and outlier management regarding this growth measure.	NNAP recognises that outlier identification would not be appropriate for this measure at the time of its introduction. Therefore, NNAP proposes to report the prevalence of EUGR but not to subject the data to outlier identification or management. Any change to this policy would be subject to review in the future.
Comments highlighting that slow growth is multi-factorial and is not simply related to undersupply of	Nutritional intake and nutritional care strategies are amongst the most significant influences on the growth of preterm infants. Other factors are also important, and the role of infection and inflammation is well-known.

nutrition or shortcomings in nutritional care.	The proposed measure is not intended to be a simple marker of nutritional intake, nor a straightforward barometer of the quality of nutritional care. However, changes in nutritional approach have been identified to lead to changes in the growth of infants. As several respondents highlighted, quality improvement processes are available to units (or networks) who seek to increase the growth of their infants. As with many NNAP measures, there is no expectation that every infant will have a favourable outcome for this measure (in the same way that some infants are bound to experience bronchopulmonary dysplasia regardless of the clinical approach adopted in a unit, but its prevalence remains a useful description of outcome). Some infants may inevitably suffer an adverse growth outcome due to non-modifiable medical problems. However, changes in the prevalence of EUGR over time in a group of babies, or variance between similar units or networks, may highlight useful potential areas for improving care.
Growth as a surrogate marker (and perhaps not a good surrogate marker) for other outcomes which are more important.	There are established associations between growth and other important outcomes. Surrogate markers are frequently used to measure care and to provide information to care providers. The definition of EUGR for the proposed measure is restricted to those who experience very significantly slow growth (a fall of at least 2 z-scores). NNAP and its consultees considered that it was not biologically plausible, nor was it supported by the evidence base, to assert that growth which was so much slower than normal could be considered healthy or desirable.
Opposition to the attribution of infant growth to individual units when several units may have contributed to their care.	The attribution of growth outcomes to individual units is challenging, as many respondents pointed out. The care of a significantly preterm infant may be shared between several units. Some correspondents requested that outcomes be described for those infants whose care was restricted to one centre. In response to the feedback received, NNAP proposes to report this measure at the network level only, at least in the first instance. Movement between networks is significantly less common than the movement of infants between units within one network.
Concerns about perverse incentives to reduce breastmilk feeding in favour of formula feeding.	This issue was raised by a small number of respondents and was prominent in the feedback from consultees. NNAP is committed to the promotion of breastmilk feeding for preterm infants, as indicated by the numerous measures of breastmilk feeding which are reported in the audit. It seems intrinsically unlikely that clinicians would be so swayed by the introduction of the new growth measure that they would disregard the other measures (within NNAP and other QI initiatives) which assess provision of breastmilk to these infants. The decision to set the threshold for EUGR at a drop of 2 z-scores was, in part, informed by concerns about perverse incentives on breastfeeding. It is demonstrably true that most infants can be supported to exhibit growth within these strictures with a diet based on their own mother's milk.
Concerns about duplication of data collection in those units not using Badgernet.	NNAP was of the view that asking units to provide a minimum of two weight measurements and two head circumference measurements for each infant was not unduly burdensome and should be achievable within a well-designed neonatal EPR system.
Calls to include length measurements in the proposal.	Many specialists in the field of neonatal growth set great value in measurements of length. However, on the national scale at which NNAP must work, linear growth of infants is rarely monitored, and it would be difficult to sustain an assertion that there is consensus within the neonatal community that it should be regularly assessed. This is particularly true for the least mature infants, especially within the first week of life.

	If NNAP were only to be prepared to countenance description of an EUGR outcome if length data were present for every baby at less than one week and at 36 weeks postmenstrual age, it is likely that the entirety of the measure would be grossly compromised by a high proportion of babies with missing data, significantly hampering the ability of the measure to do good. Partner organisations with an interest in promoting the measurement of length may choose to support units and networks to expand their capability to do so, including by supporting the establishment of consistent supplies of the equipment required to reliably measure the length of very small and vulnerable infants, and the promotion of training and support for their universal use. Evidence for a link between linear growth and important outcomes remains sparse, arguably due to its irregular measurement. Should the capability of units to provide length measurement improve, or should the evidence for its inclusion become more compelling, NNAP would be glad to revisit its inclusion in this growth measure.
Concerns about the changes in weight and head circumference during the first week of life.	There are significant changes in weight and head circumference during the first week of life. Early water loss tends to lead to weight loss (although the magnitude of this effect at different gestations is somewhat uncertain). Similarly, the heads of preterm infants seem to shrink, presumably due to changes in the interstitial fluid of the scalp. There is a tension between the most scientifically valid approach and one which is easily understood by clinicians, and which uses readily available data. It may be more scientifically valid to use measurements towards the end of the first week of life (although the amount of "permissible" weight loss during the first week of life is uncertain). On balance, NNAP decided that birthweight should be used for clarity, and a fall of 2 z-scores was sufficiently large to absorb the effect of early changes. As the measure matures, NNAP will consider whether taking the lowest value within the first week of life if feasible and desirable.
The impact of hydrops fetalis and genetic syndromes on the proposed measure	The prevalence of hydrops fetalis and major genetic differences affecting growth in preterm infants admitted to neonatal units is low and is not likely to vary significantly between units in a way which would bias results. Sadly, mortality in such infants born very preterm is high, and so a proportion of them will be excluded from analysis due to their death before 36 weeks postmenstrual age. As set out above, it is not expected that every infant can or will achieve a favourable outcome for this measure, and syndromic infants may represent a small proportion of those who do not.
Questions over the validity of excluding infants who died before discharge	It would not be possible to fairly assess the growth of infants who died during the very early part of their life. However, it is reasonable to include those infants who reached a corrected gestational age of around 36 weeks before dying, so NNAP will review including those infants.

Dr Aneurin Young, on behalf of the NNAP Methodology and Dataset Group, October 2026.