



Screening of Birth Length and Parental Height Detects Infants With Poor Catch-Up Growth at Age 2 Years: An Update on the Ayrshire Project of Follow-Up

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BACKGROUND

- A programme of measuring birth length (BL) and parental heights (PH) for neonates classified as Small for Gestational Age (SGA, Birth Weight (BW) <9th centile, UK 1990 reference data) has been trialled in the Ayrshire Maternity Unit, Scotland, since 2008. The outcome of one year of screening has already been published (Montgomery Sardar et al 2015).
- This initial study found that 5 of 6 children who remained short at 2 years were not known to medical services. However, 29% of infants <9th centile had not had BL measured, only 24% of fathers and 46% of mothers had been measured, while only 57/73 (79%) eligible infants had been successfully re-measured at 2 years.
- Accordingly, a second study was launched in 2013 in order to ascertain the feasibility and usefulness of short stature screening at birth now that staff at AMU were familiar with the screening process.

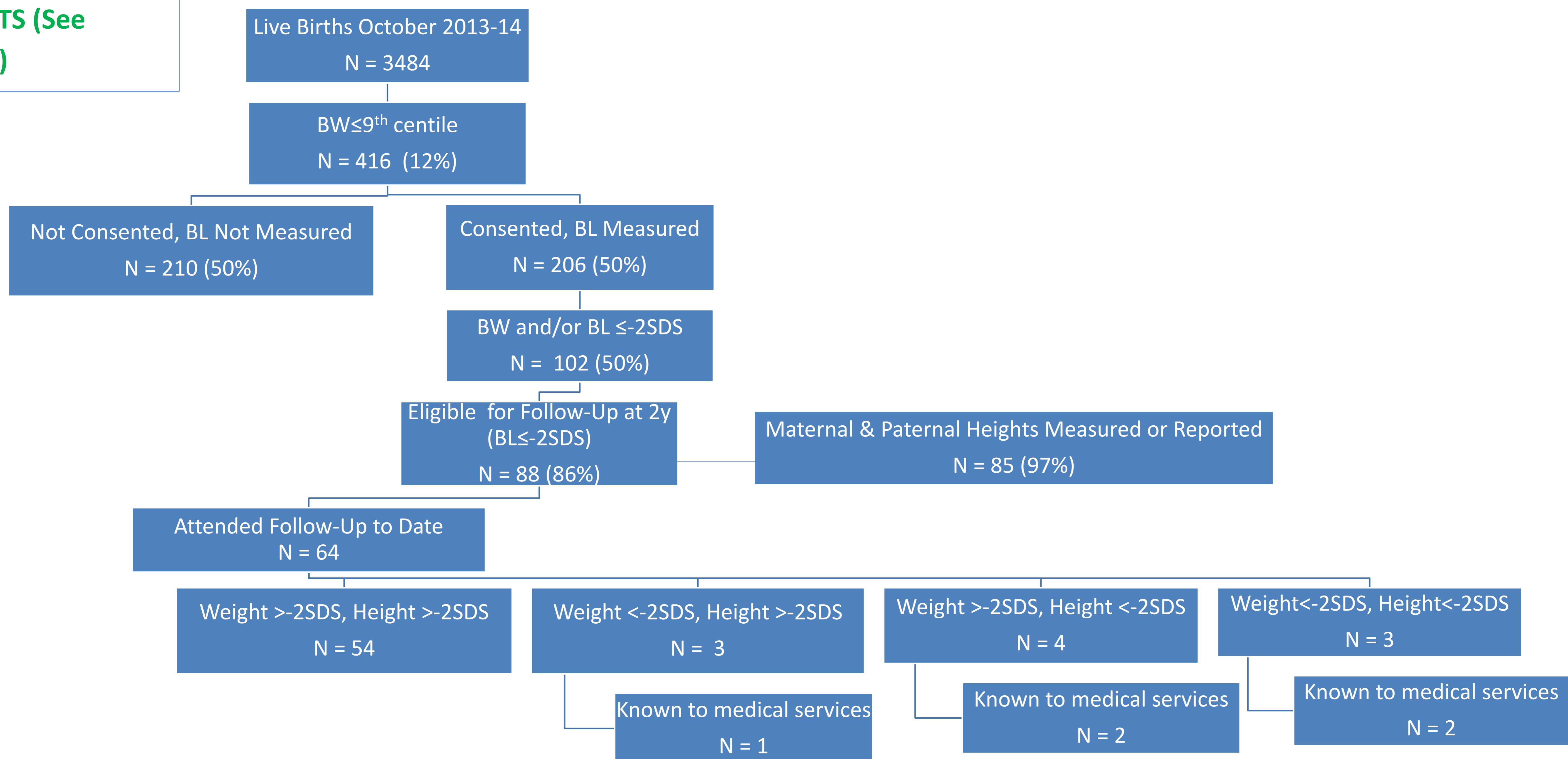
OBJECTIVE AND HYPOTHESES

- Objective:** To determine whether: (1) catch-up growth has occurred in neonates of short stature by age 2yrs; (2) there is a genetic influence on their stature.
- Hypothesis:** Targeted measurement of short babies and their parents is both feasible and effective in detecting short children at birth who then remain short at 2 years and merit further follow up. This type of short stature screening should therefore be incorporated into routine newborn assessment as part of good clinical practice.

METHODS

- BL and PH were measured for all SGA neonates born in Ayrshire Maternity Unit from October 2013–October 2014.
- Parental consent was sought for measurement at birth and follow up at 2 years.
- Mid-parental height (MPH) and lower end of parental target range (LTR) were calculated using UK 1990 reference data.
- Infants with short stature (BL ≤ -2 standard deviation scores/SDS) were offered follow up at 2yrs in order to determine catch-up growth.

RESULTS (See Figure)



SUMMARY OF FINDINGS

- Between 7th October 2013 and 6th October 2014, 3510 babies were born in the unit in whom BW data was available in 3484 liveborn infants.
- BW was ≤9th centile in 416 (11.9%) infants of 28–41wks gestation (Figure 1), with consent to participate obtained in 206 (50%) of these infants.
- BL was measured in 189 (92%) of the consented infants, of whom 14 (7%) were Light, 50 (26%) Short and 38 (20%) both Light+Short.
- Both parents were measured in 175/206 (85%) infants.
- Of the 88 children eligible for follow-up, 64 (73%) have been reviewed at age 2 years to date. Of these, 7 (11%) remained of short stature (4 Short, 3 Light+Short) and 3 (5%) remained Light.
- Of the 10 children whose growth was a concern at age 2 years, 5 (50%) were not known to medical services, 4 were under neurodevelopmental review and 1 was known to medical services due to social reasons.

CONCLUSION

- As expected, ~10% of the short cohort remained short at 2 years, three of whom would not have been detected without the screening programme.
- A further 5% of the short cohort were Light at 2 years, 2 of whom would not have been detected without the screening programme.
- The number of children requiring re-measurement at 2 years (88/3484) is relatively modest and consideration should be given to extending accurate BL measurement to infants with BW ≤15th centile (462 in the current study) since it is known that a cut-off BW of ≤9th centile (n = 257 for this study) will not detect all cases of short stature at birth (Montgomery Sardar et al 2015).
- If measurement of light infants and their parents in the newborn period and follow-up of short children at 2 years were to be incorporated into standard practice rather than in the context of a research study requiring parental consent, then our targeted approach would be feasible and effective in identifying children of short stature who otherwise would not receive clinical review of their growth pattern.

REFERENCES

¹Montgomery Sardar C, Kinmond S, Siddique S, Cooper A, McGowan S, Paterson W, Donnelly S, Gault EJ, Donaldson M. Short stature screening by accurate length measurement in infants with a birth weight <9th centile. *Horm Res Pediatr* 2015, 83, 400–407. DOI: 10.1159/000376611



Disclosure Statement

The authors have no potential conflicts of interest to declare.